GAS

ENGINEERING • UTILIZATION • LOAD-BUILDING • MANAGEMENT

9363

REYNOLDS

Even as the Famed Knights of Old in Legends Bold — Protected and Safe-Guarded the Citizenry — So do REYNOLDS Regulators protect and guard Homes and Industries of today.

Since 1892 REYNOLDS has constantly devoted every available means to maintain the high character of its products — in design and manufacture — and to extend the range of their application.

In the Gas Control Field for nearly half a century, the name REYNOLDS has been the standard of comparison — so recognized by the Gas Industry.

REYNOLDS offers complete cooperation in solving Gas Control Problems. Write.

REYNOLDS GAS REGULATOR CO.
Anderson, Indiana, U. S. A.

Gas Control Since 1892

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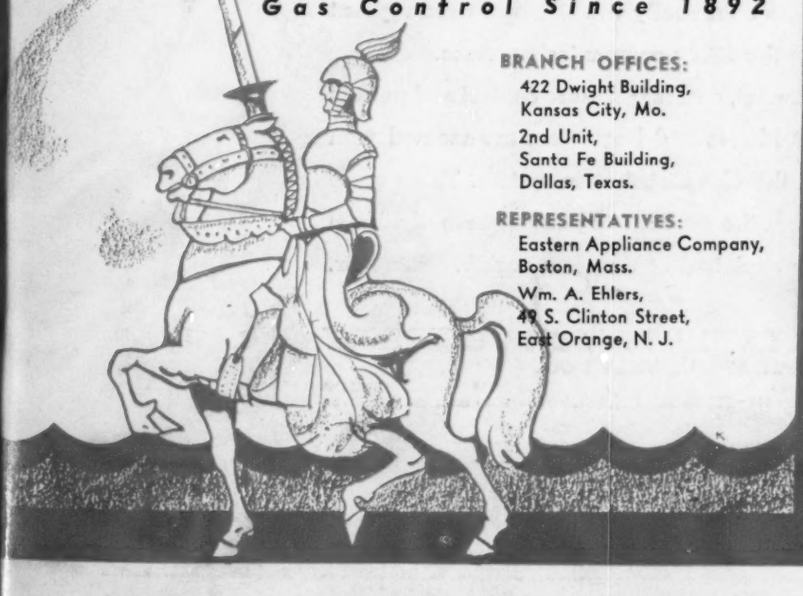

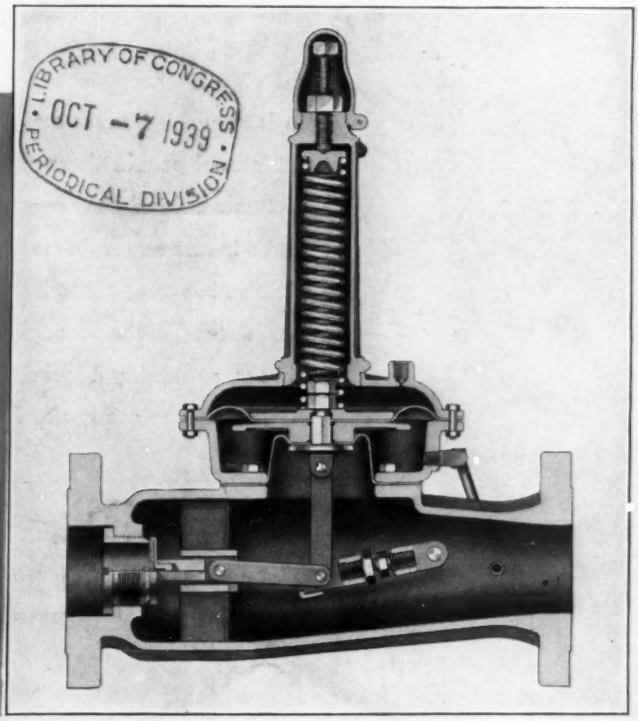

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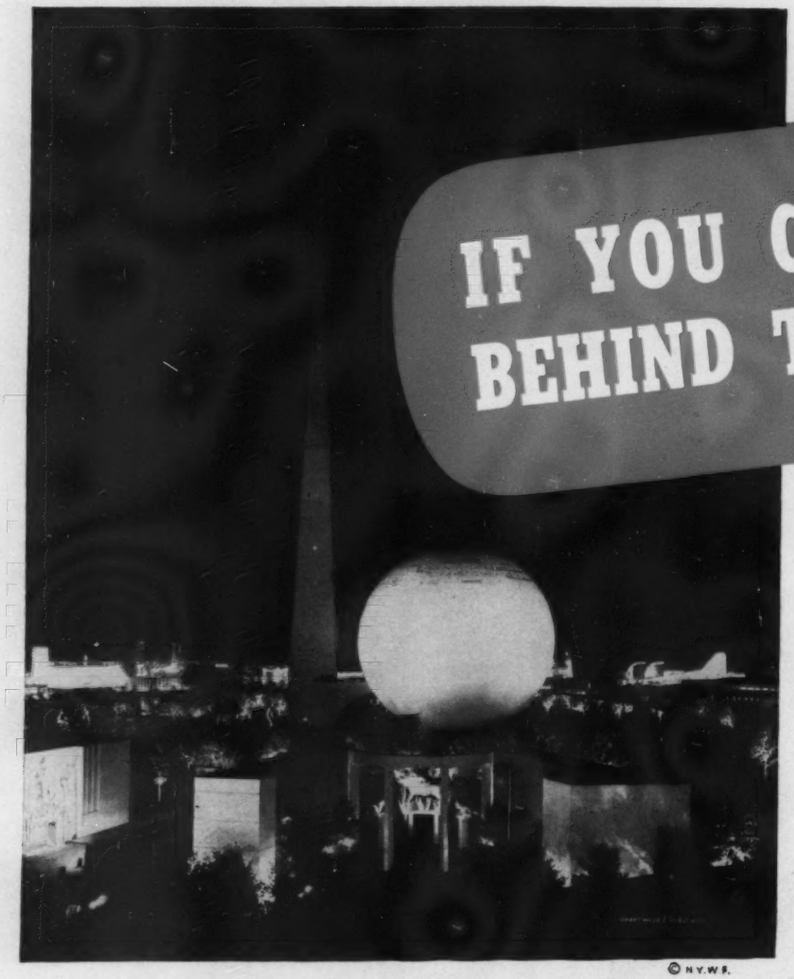

IF YOU COULD SEE BEHIND THE SCENES

© N.Y.W.F.

AT THE NEW YORK WORLD'S FAIR

Throughout the distribution system serving the New York World's Fair, Nordstrom Lubricated Plug Valves are used 100%. The District Governors are EMCO Low Pressure Balanced Valve Regulators. Many of the services are metered by EMCO No. 4½ and No. 5 Pressed Steel Meters. This modern equipment is readily accessible for gas men to view while visiting the World's Fair.

OUT FRONT . . . ROMANCE AND GLAMOUR
BEHIND THE SCENES . . . STURDY WORK-A-DAY EQUIPMENT

To insure the beauty and enjoyment of the New York World's Fair to millions of people there must be continually working and ever vigilant sentinels behind the scenes on the utility companies' services.

To insure accurate measurement, correct pressure control and perfect distribution conditions EMCO Meters and Regulators are teamed with Nordstrom Valves throughout the Gas distribution system. Those same virtues, so readily appreciated in the less exciting atmosphere of normal distribution systems, are fully exploited at the New York World's Fair.

PITTSBURGH EQUITABLE METER COMPANY
MERCO NORDSTROM VALVE CO.

NEW YORK · BUFFALO · PHILADELPHIA
KANSAS CITY · TULSA · LOS ANGELES
Main Offices - PITTSBURGH, PA.
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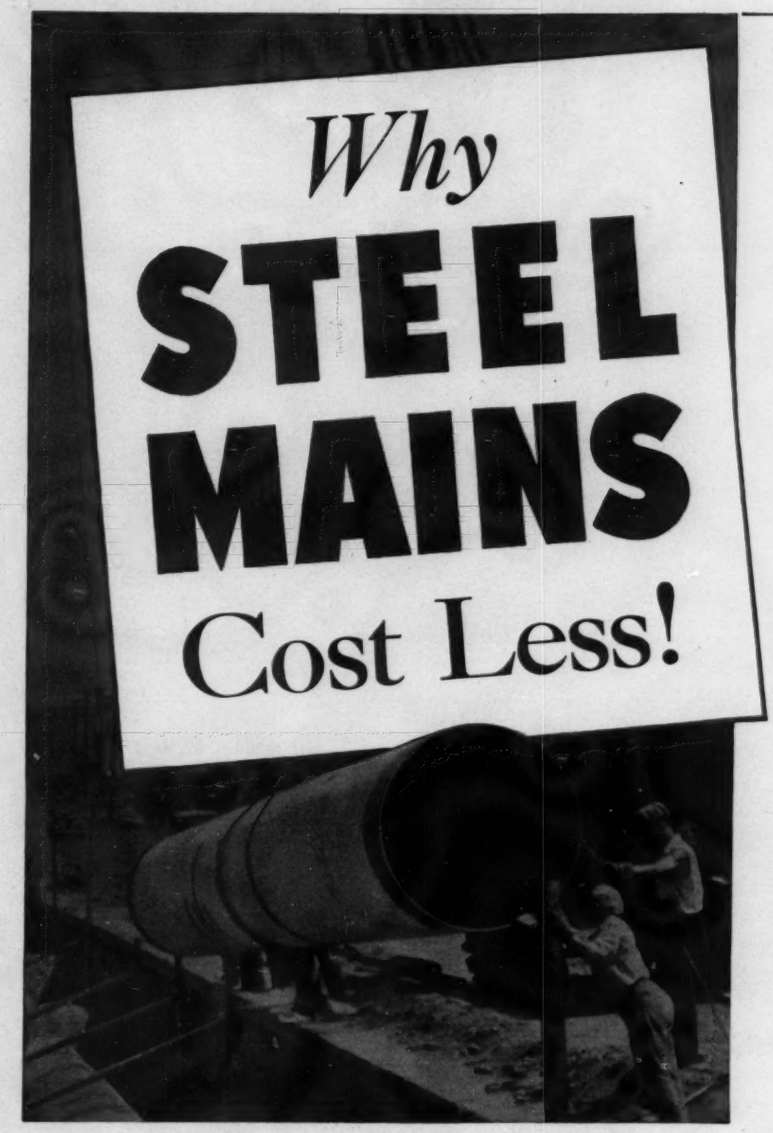
EMCO METERS AND REGULATORS • NORDSTROM LUBRICATED PLUG VALVES



. . . IN LAYING

Steel gas mains cost less to lay because steel pipe weighs less and is easily handled, comes in longer lengths, is readily joined, and requires fewer joints per mile. You can use narrow trenches, because joints on steel pipe can be made in less space.

. . . IN OPERATION

Steel gas mains cost less to operate because they retain full carrying capacity for longer time. Pumping costs are lower. Money ordinarily spent for periodic cleaning of mains is saved. The use of steel pipe reduces leakage and the usual anticipated loss per mile common to other materials.

. . . IN MAINTENANCE

Steel gas mains cut repair bills and prevent property damage, because they are not subject to sudden breaks. Steel is strong and ductile —not brittle. You can bend it severely without breaking it. That's why steel pipe withstands earth settlement, shock, vibration — without damage. It's this ability of steel pipe to "stay" put in the trench in spite of unpredictable stresses that eliminates costly maintenance.

• • •

NOW write for more information on NATIONAL Steel Pipe for Gas Mains. The National organization, world's largest makers of tubular products, is equipped to serve you efficiently, speedily, and in exact accordance with your requirements.

FOR HIGH GAS PRESSURES

For greatest safety in handling gas pressures, we recommend NATIONAL Seamless Pipe, a pipe that is made without welds, by piercing solid billets of highest quality steel. This pipe removes possibility of localized weakness and assures full wall strength throughout. NATIONAL Seamless is available in sizes up to 24-inch O. D. Write for data.

WALLS WITHOUT WELDS
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NATIONAL TUBE COMPANY

PITTSBURGH, PA.

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GAS

Fifteenth Year of Publication

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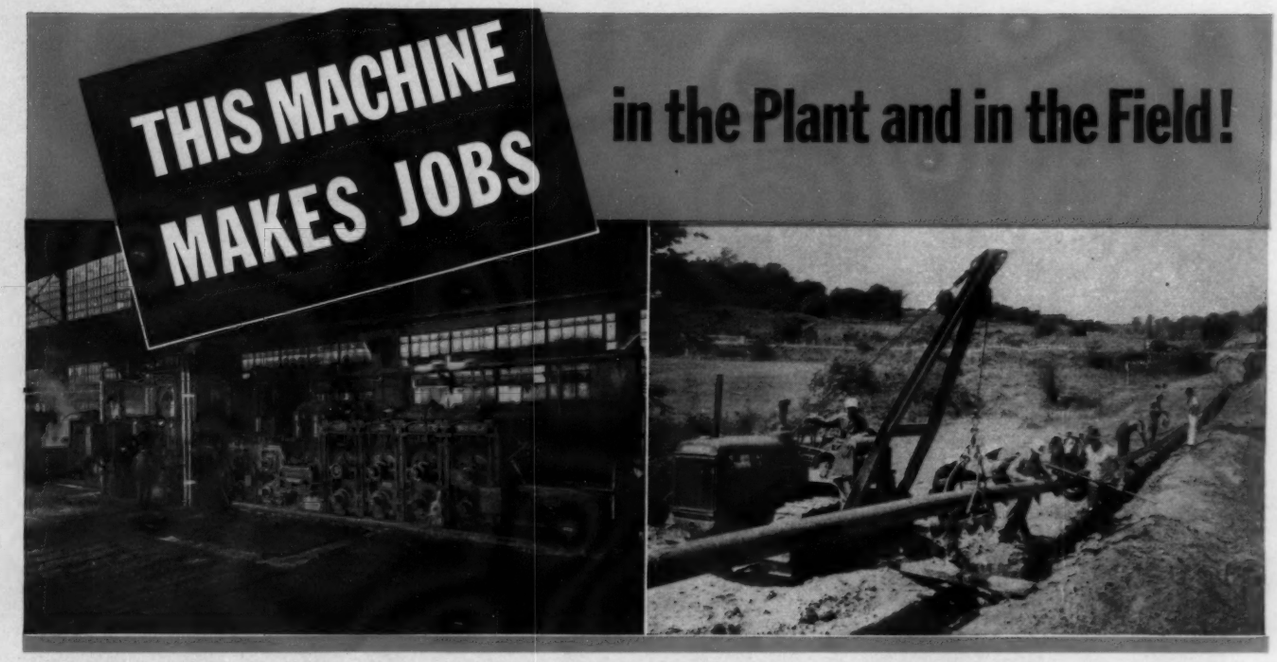

Republic Electric Weld Line Pipe was used for this 275-mile line carrying gasoline from St. Louis, Mo. to Chicago, Ill. **REPUBLIC ELECTRIC WELD IS THE IDEAL PIPE FOR GASOLINE LINES.**

● In these days of business unrest — when the machine is decried as a "killer" of men's jobs — and loud-voiced orators preach fantastic and untried theories of economics — it's refreshing to read the facts.

Here's a machine that makes jobs — in the plant and in the field.

To feed it, men must dig and transport iron ore, coal and limestone. Men must smelt the iron — change it into steel — roll it — form it — weld it into pipe — inspect and test — sell and ship. All these operations mean jobs in the plant.

Now, pipe lines are based on sound — and tried — economics. If old pipe-making processes had not been improved, the cost of pipe lines would make them uneconomic, and few or none would be built. But the steel companies of America have spent hundreds of millions of dollars in research and plant improvements during the last decade, to key their products to the needs of industry. How this has affected petroleum transportation is shown by the fact that during the first half of 1939 a total of 41 pipe line projects, 2400 miles of line, and costing $25,000,000, were announced.

Many miles of this pipe has come from this machine. It has made jobs for engineers, ditcher and tractor operators, welders, wrappers, laborers. It has brought jobs to railroad men, truckers and men in factories making tanks, pumps, gauges and welding equipment — all because Republic has three mills of this type and can turn out more than 45 miles of pipe a day — pipe with a weld as safe as the wall — that is ductile enough for field bending — in long lengths up to 54 feet — and easily weldable alongside the trench.

This machine makes jobs — and helps provide America with the lowest cost automotive transportation in the world.

May we send you complete data on Republic Electric Weld Line Pipe?

REPUBLIC STEEL CORPORATION
General Offices: Cleveland, Ohio

REPUBLIC LINE PIPE

BERGER MANUFACTURING DIVISION
NILES STEEL PRODUCTS DIVISION
UNION DRAWN STEEL DIVISION
STEEL AND TUBES, INC.
TRUSCON STEEL COMPANY

REG. U.S. PAT. OFF. REPUBLIC STEEL

OTHER REPUBLIC PRODUCTS USED BY THE PETROLEUM INDUSTRY

Alloy and Carbon Steels — Wire Nails and Staples — Woven Wire Fencing, Barbed Wire and Steel Fence Posts — Upson Quality Headed and Threaded Products — *ENDURO Stainless and Heat-Resisting Steels — *Toncan Iron Culverts and Sectional Plate Pipe — Sheets, Light Plates and Roofing Products — Toncan Iron Enameling Stock (for service stations) — Truscon Standard Steel Buildings — Berloy Steel Shelving, Bins and Lockers — *Electrunite Boiler and Condenser Tubes — Niles Steel Shipping Containers — Tin Plate

*Reg. U. S. Pat. Off.

You Sell (P) Equipment

BUT... DO YOU SELL THE *CLEAN* GAS IT DEMANDS?

Distributing *clean* gas, of uniform quality, is the only *sure* way to keep the users of C. P. Equipment well-satisfied... to keep their appliances operating as they should.

●

You must depend on your manufacturing and purifying equipment to produce the clean, quality gas now demanded. In many cases, this means modernization of and additions to your present facilities.

●

To assist you, Semet-Solvay offers you the benefit of wide experience in designing, fabricating and constructing equipment for the manufacture, cleaning and purification of gas to meet specific requirements.

●

Whenever you are considering changes or additions to your plant, make your problems known to us. Our complete organization is at your service.

SEMET-SOLVAY EQUIPMENT

FOR CLEANER GAS

WASHER COOLERS
Remove Tar

MULTIPLE WASHERS
Remove 90% of remaining Tar

NAPHTHALENE SCRUBBERS
Leave less than 4 grains per 100 cu. ft.

GAS PURIFIERS
Remove H_2S

CONDENSERS
Cool the Gas

and

SEMET-SOLVAY

WATER GAS MACHINES

FOR LOWER PRODUCTION COSTS AND UNIFORM QUALITY GAS

SEMET-SOLVAY

ENGINEERING CORPORATION

Engineers ***Contractors***

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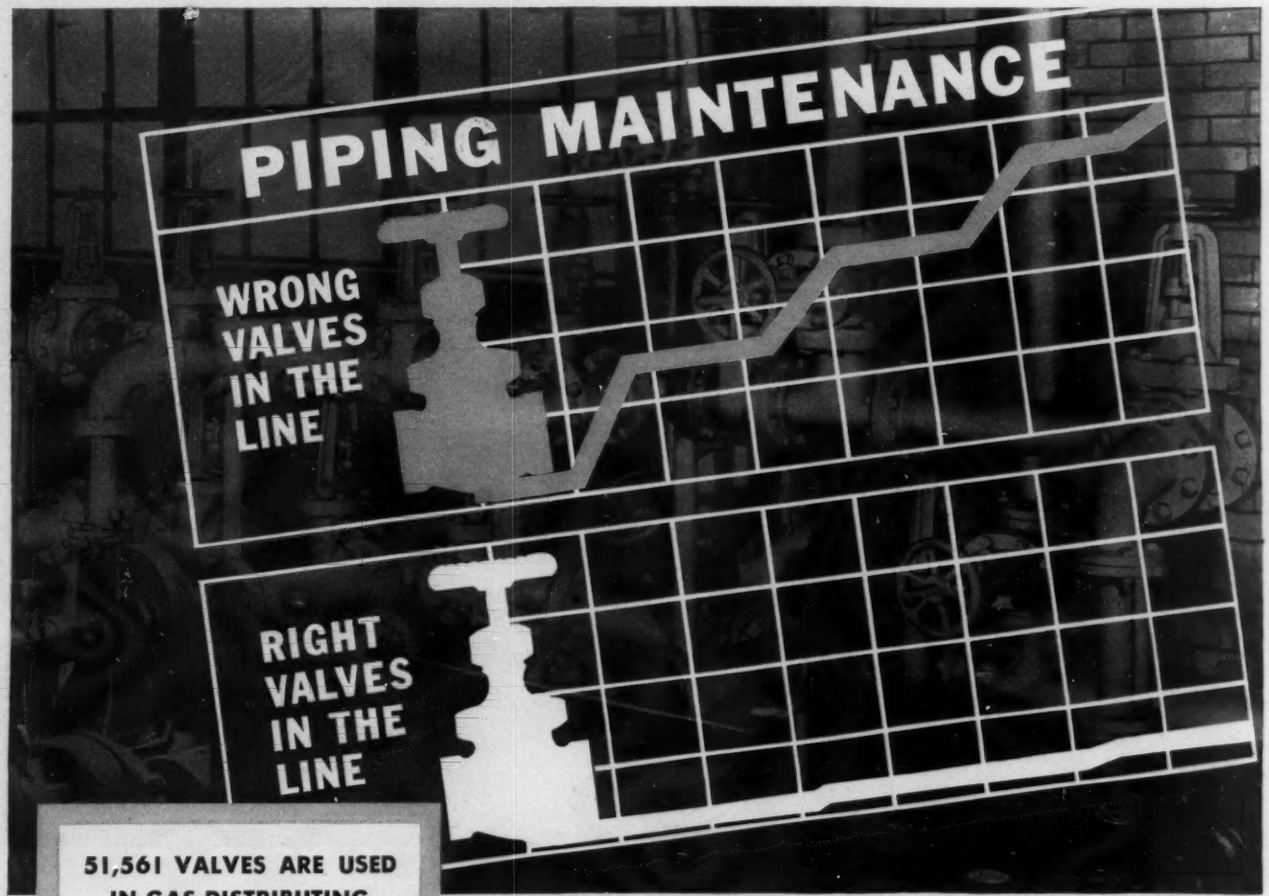


51,561 VALVES ARE USED IN GAS DISTRIBUTING SYSTEM

In one natural gas system of medium size, 51,561 valves are required to serve its customers. In number, or dollar value, the size of this valve investment emphasizes the need of careful valve selection for your system, be it large or small—to keep piping maintenance at rock bottom—to assure worth-while return on the investment.

The Crane Bulletin, "Service Characteristics of Globe Valves and Gate Valves," with its Valve Selection Guide helps you avoid mis-application of valves. It shows you the way to low-cost valve maintenance. Get a free copy from your Crane Representative—or, write for one today.

YOUR PIPING COSTS STAY DOWN *when valves are properly chosen*

THE reason for this is simple. In the broad line of valves offered to industry today, there is one that is best suited to each specific application—one that exactly matches working conditions.

Perhaps service conditions in your lines vary slightly—do not appear important, or deserving of special attention. Yet economical valve performance begins only with proper valve selection; and every variable of service influences valve choice.

Perhaps individually, maintenance of your valves does not seem excessive, and is overlooked. But consider it in terms of all the valves in your plant—and in terms of operation interruptions. Your findings may be astonishing.

Because experience is the best means of gauging piping costs, Crane can help you keep them at a minimum. With a successful background in solving industry's piping problems, with unparalleled research and plant facilities, and with over 84 years of manufacturing skill, Crane has developed so complete a line of valves that every need of flow control can be filled with Crane-Quality equipment.

And because Crane-Quality is the result of extreme accuracy in manufacture, of careful analysis and specification of materials that go into each part, Crane valves assure the long, economical service that keeps piping costs down.

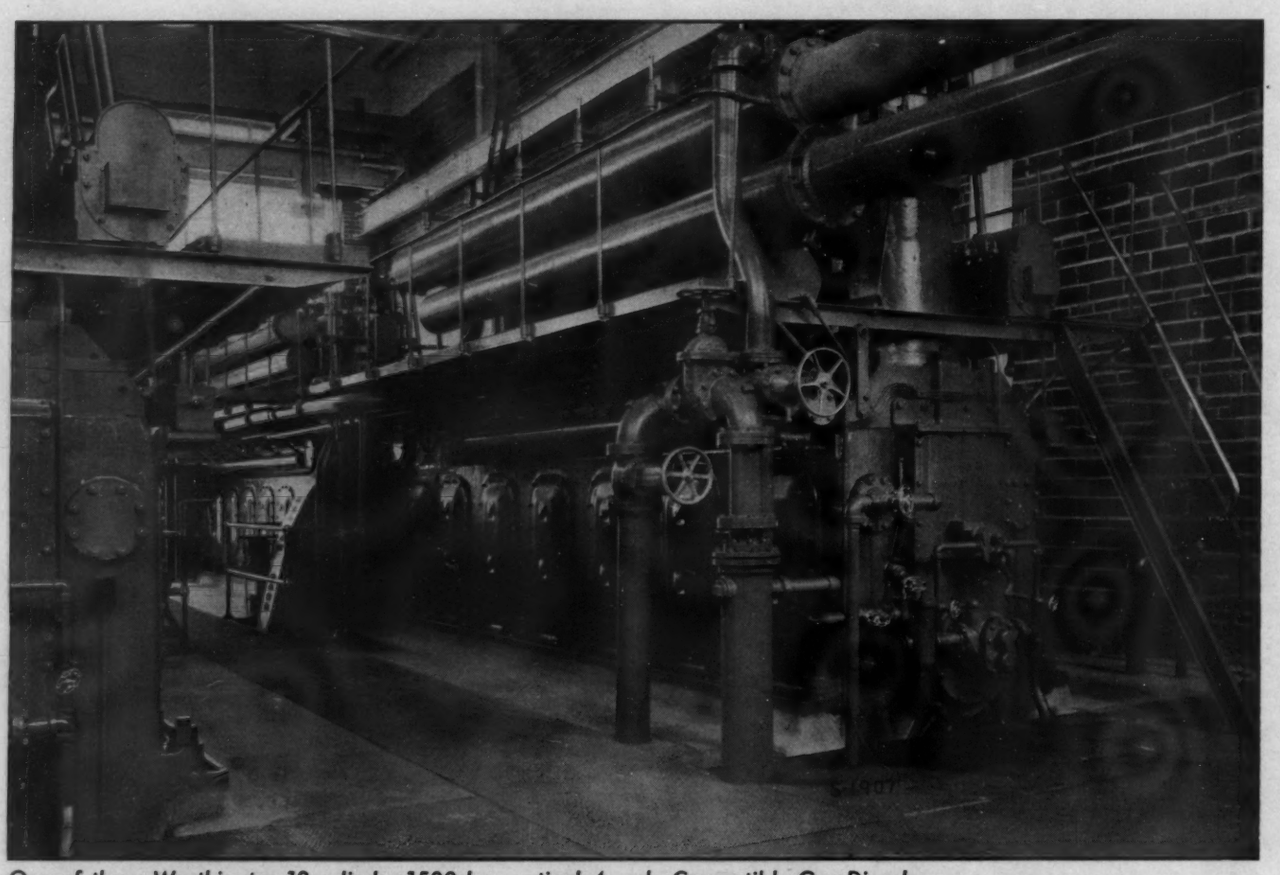
Backed by the Crane line of more than 38,000 piping items, your Crane Representative can help you solve your flow control problems. Call him today.

CRANE

CRANE CO., GENERAL OFFICES
836 S. MICHIGAN AVE., CHICAGO

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS



One of three Worthington 12-cylinder 1500-hp. vertical 4-cycle Convertible Gas-Diesel Engines, in the Bunkie, Louisiana, plant of the Louisiana Ice and Electric Company

Another large utility buys convertible engines

WORTHINGTON Convertible Gas-Diesel Engines offer to natural gas distributors an exceptional means to substantially increase . . . as well as level out . . . their pay loads.

For the plant owner, their quick convertibility from gas to Diesel fuel constitutes protection of his plant investment . . . a powerful sales influence in gas power sales negotiations in which such fuel availability may be the determining factor.

These units are built in sizes from 50 to 1500 horsepower, and are readily convertible in a few hours, by means of few parts . . . at low cost. They offer the advantage of the highest economy in fuel, either as gas or Diesel engines.

A staff of qualified Worthington engineers is ready to work with you on any gas power problem

WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices: **HARRISON, NEW JERSEY** • *Branch Offices and Representatives in Principal Cities throughout the World*

WORTHINGTON

ATLANTA BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT EL PASO HOUSTON KANSAS CITY LOS ANGELES NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL SAN FRANCISCO SEATTLE TULSA WASHINGTON

GE9-S

"Carboseal" Anti-Leak Performance Speaks for Itself

Reports prove that this Low-Cost Method of correcting leakage in Dry Bell-and-Spigot Joints produces results

REPORT A: A system consisting of 2,040 ft. of 8-in. main and 35,240 ft. of 4-in. main was treated with "Carboseal" anti-leak last Fall. Only 3 applications were made. Six drums of "Carboseal" anti-leak were used. Preliminary tests show a reduction in the total unaccounted-for gas loss of over 60 per cent.

Report B: Five injections of "Carboseal" anti-leak were made over a period of 10 months to 980 ft. of 8-in. main with cement joints. The metered leakage, with customer's meters shut off, dropped 79.5 per cent.

Report C: An 8-in. low-pressure main 2,100 ft. long was given 8 "Carboseal" anti-leak treatments in 7 months. Before treatment, a leak detector showed accumulations of gas beneath the pavement. Three months after the last treatment, the bar holes were entirely clear of gas. The estimated saving over the cost of installing leak clamps was $1,575, or $9.00 per joint.

Report D: A company started treating the entire cast iron portion of its low-pressure system (103 miles of 3-in. equivalent main) with "Carboseal" anti-leak in January, 1938. In March, 1939, 90 miles had been treated. The combined unaccounted-for gas volume for January and February, 1939, was 65.2 per cent lower than for the same months of 1938.

* * *

These results are typical of the experiences of more than 250 "Carboseal" anti-leak users the country over. You also can benefit from this effective and inexpensive method of correcting bell-and-spigot joint leakage in distribution systems carrying dry manufactured or natural gas. Why not plan now to start using "Carboseal" anti-leak in your system. Write for further information, without obligation.

How "Carboseal" Anti-Leak Works

"Carboseal" anti-leak, a scientifically developed liquid, is introduced into the mains at high points and flows over the joints by gravity to the drips where the surplus is recovered for reuse. It can also be sprayed into the mains by means of a hose. Both of these methods are used without interrupting gas service. Expensive joint excavation is eliminated.

"Carboseal" anti-leak cuts tar and gum deposits in the joints and swells dried-out jute packing to its fullest extent, so that the packing fills the voids. Joints treated in this way keep gas inside the mains and remain tight indefinitely. Soap tests on joints treated six years ago show that they are still tight.

For information concerning the use of "Carboseal" anti-leak, address

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

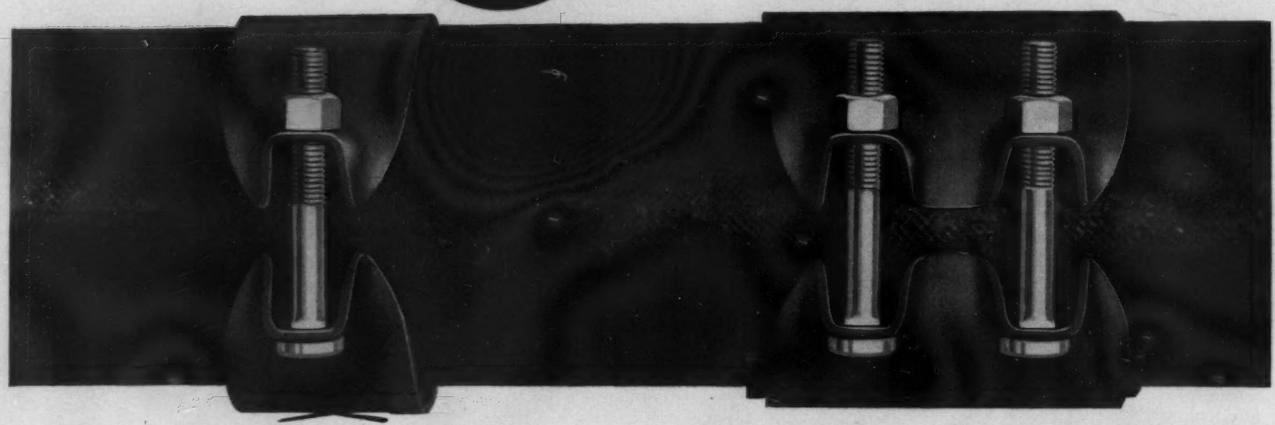
UCC

30 East 42nd Street, New York, N. Y.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

The word "Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

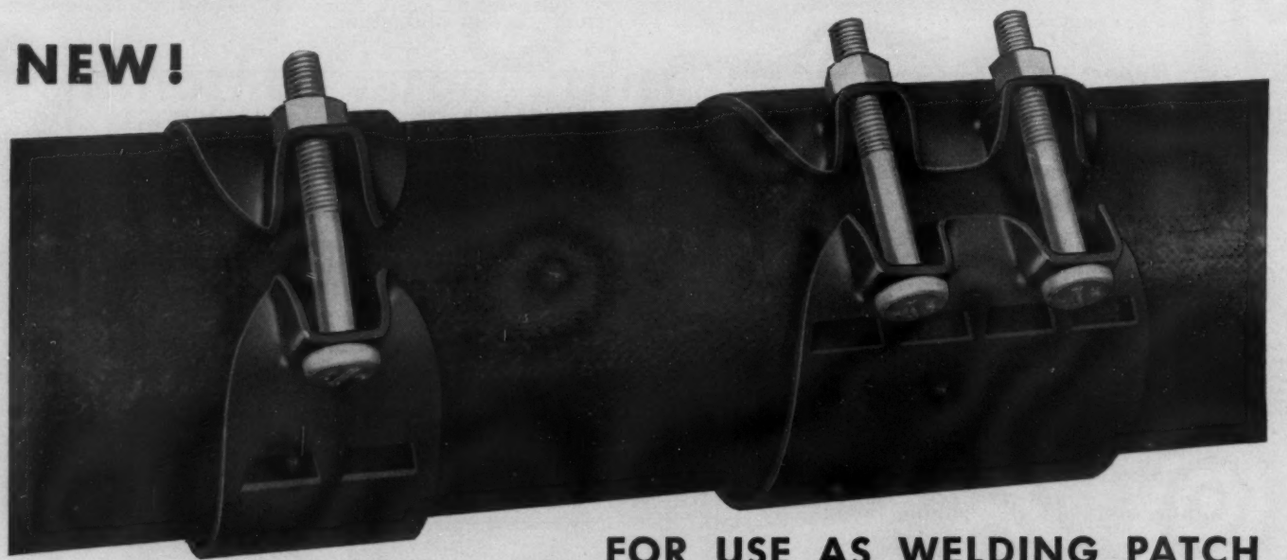
STOP PIPE LEAKS— EASILY! QUICKLY! AT A SAVING! WITH THIS ECONOMICAL CLAMP!



PRESSED STEEL ECONOMY CLAMP

★ Maintenance men like SKINNER-SEAL Pressed Steel Economy Clamps, because they are easy to apply anywhere without loss of time, because they are superior to home-made repairs – and less expensive. Exceptionally strong – made of 3/16" hot pressed steel plate with wedge-shaped lugs. Enameled and equipped with cadmium plated steel bolts. Two widths! NARROW – 3½" wide, for pit holes, complete with rubber cone plugs riveted in place; and WIDE – 6½" wide, for running corrosion spots, complete, with strip gaskets.

NEW!



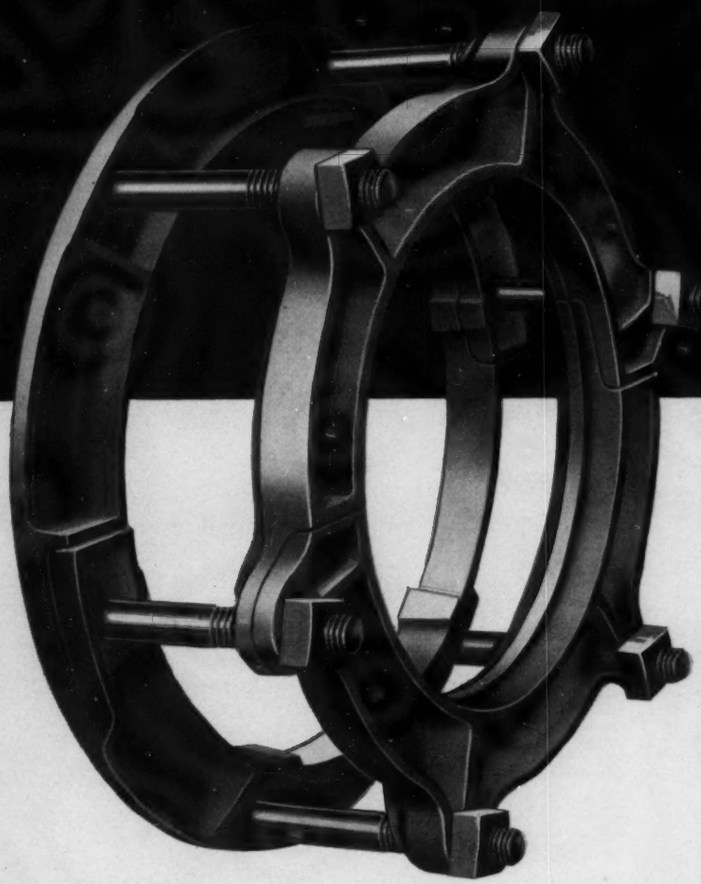
FOR USE AS WELDING PATCH

★ Perforated type of Pressed Steel Economy Clamp is now available on order, with the half clamp containing gasket perforated – so that after sides are welded, lugs may be broken off to simplify completing weld.

PIPE SIZE INS.
3
4
6
8
10
12
16
20
24
30
36

M. B. SKINNER CO. *Est. 1898* SOUTH BEND, IND.

Dayton No. 12 B Bell Joint Clamp

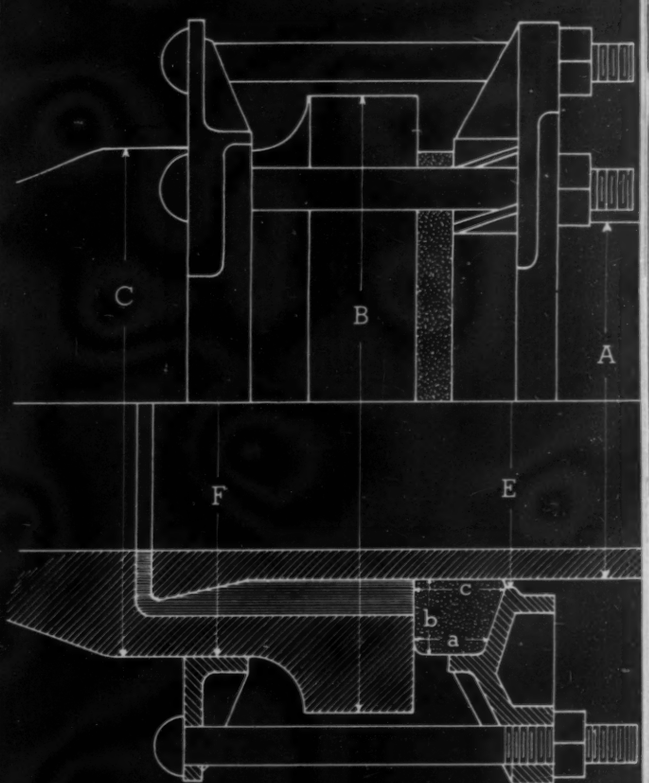


This clamp, for repairing joint leaks in Bell and Spigot pipe, features simplicity in design and rigidity and sturdiness of construction.

Simplicity of design minimizes number of parts and eliminates adjustments. Fewer parts, especially in larger sizes, facilitate installation. The clamp is tailored to the joint.

The rigidity of the clamp and sturdiness of construction embodies every assurance of a permanent repair and will withstand pressures greatly exceeding any that will be encountered.

PIPE SIZE INS.	PIPE AND BELL DIMENSIONS			FRONT RING ID	BACK RING ID	GASKET			BOLTS	
	A	B	C	E	F	a	b	c	No.	SIZE
3	3.80	7.40	5.98	3.938	6.250	.813	.938	1.00	4	⅝ x 5½
4	4.80	8.40	6.98	4.938	7.313	.938	.938	1.25	4	⅝ x 6
6	6.90	10.70	9.14	7.031	9.375	.938	.938	1.25	6	⅝ x 6
8	9.05	13.43	11.43	9.188	11.688	.938	.938	1.25	6	⅝ x 6
10	11.10	15.10	13.48	11.250	13.750	.938	.938	1.25	8	⅝ x 6½
12	13.20	17.40	15.70	13.375	16.000	.938	.938	1.25	8	⅝ x 7
16	17.40	22.00	20.20	17.625	20.563	.875	1.250	1.37	10	⅝ x 7
20	21.60	26.86	24.80	21.813	25.125	.875	1.250	1.37	15	⅝ x 7
24	25.80	31.26	29.16	26.000	29.500	.875	1.250	1.37	15	⅝ x 8
30	31.74	37.60	35.30	31.940	35.630	.875	1.250	1.37	16	⅝ x 8½
36	37.96	44.22	41.72	38.250	42.250	.875	1.250	1.37	20	⅝ x 8½



THE NATIONAL SUPPLY COMPANY
DAYTON COUPLING DIVISION
TOLEDO, OHIO

Continued Vitality *for the* Gas Industry

SINCE 1816, when the first gas plant in this country was built at Baltimore, the industry has made noteworthy progress. Its continued vitality is indicated by the attainment, in 1938, of 17,135,000 customers—the largest number ever served.

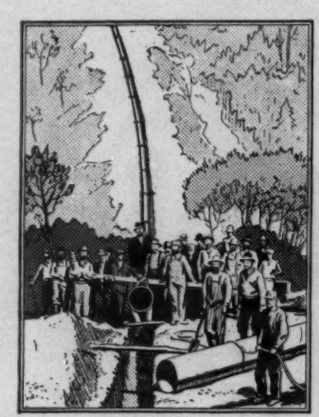
Today, both manufactured and natural gas are made available to cities, towns, villages and hamlets having a combined population of some 81,000,000. To serve these consumers, representing approximately three-fifths of all the nation's households, requires an investment in plant and equipment of nearly $5,000,000,000.

It is worthy of note that at present nearly three-quarters of all our national gas consumption is derived from natural sources.

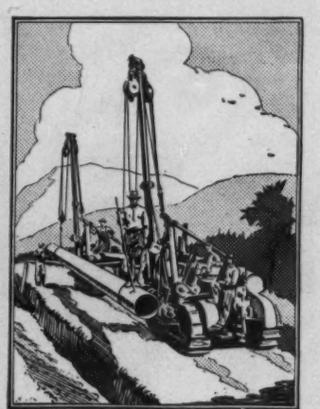
The estimated total natural gas production last year, including the amount used in non-utility sales, was two and one-half trillion cubic feet—approximately six times the comparable figure twenty-five years earlier.

Columbia System companies extend their operations through Ohio, Indiana, Kentucky, West Virginia, Pennsylvania, Maryland and New York. Fed by vast reserves, a network of interconnecting pipe lines supplies reliable gas to more than 1,100,000 consumers. In addition, these operating units provide electric service to some 350,000 customers.

The gas and electric energy thus furnished—economically and abundantly—emphasizes the basic importance of these essential utilities. When applied to raw materials, by modern production methods, this energy converts them into goods finding a ready market in the United States and in many foreign lands.



A section of line being laid more than 25 years ago in the natural gas fields of southern West Virginia



In striking contrast is this modern method of laying natural gas pipe lines for long distance transmission

COLUMBIA SYSTEM

COLUMBIA GAS & ELECTRIC CORPORATION

NOT SO LONG AGO the gas industry celebrated its Centenary as an American utility. At the same time a cast iron distribution main under the streets of Baltimore, began its one hundred-and-first year of continuous service. If equipped with today's mechanical joints, this pipe, cast in the long ago without benefit of modern metallurgical controls, would meet any modern operating requirement.

Look for the "Q-Check" registered trade mark. Cast iron pipe is made in diameters from 1¼ to 84 inches.

THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1013 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

CAST IRON PIPE

THE STANDARD MATERIAL FOR UNDERGROUND MAINS

More than a century ago, this cast iron gas main was installed in Baltimore. Here you see it uncovered, inspected and approved for further generations of service.

Any kind of labor suffices for the assembly of the modern bottle-tight mechanical joint —and in jig-time.

Let Dresser *Simplicity, Speed, Flexibility, Tightness*—ALL FOUR—work to your advantage! You will get faster completion of your pipe-lines, greater economy, better satisfaction. *Example:* 30" Philadelphia gas line pictured below. ● Every pipe-line needs "ALL FOUR." Remember: *Only Dressers Give You "ALL FOUR!"*

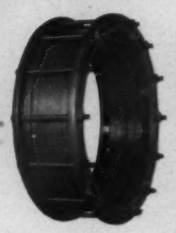
PUT ALL FOUR TO WORK FOR YOU!

SIMPLICITY—unskilled labor assembles standard parts on plain-end pipe, using only a wrench.

SPEED—typical examples: 5 minutes for 8"; 8 minutes for 14"; 12 minutes for 20" (two workmen).

FLEXIBILITY—expansion and other pipe movements absorbed; curves with straight pipe.

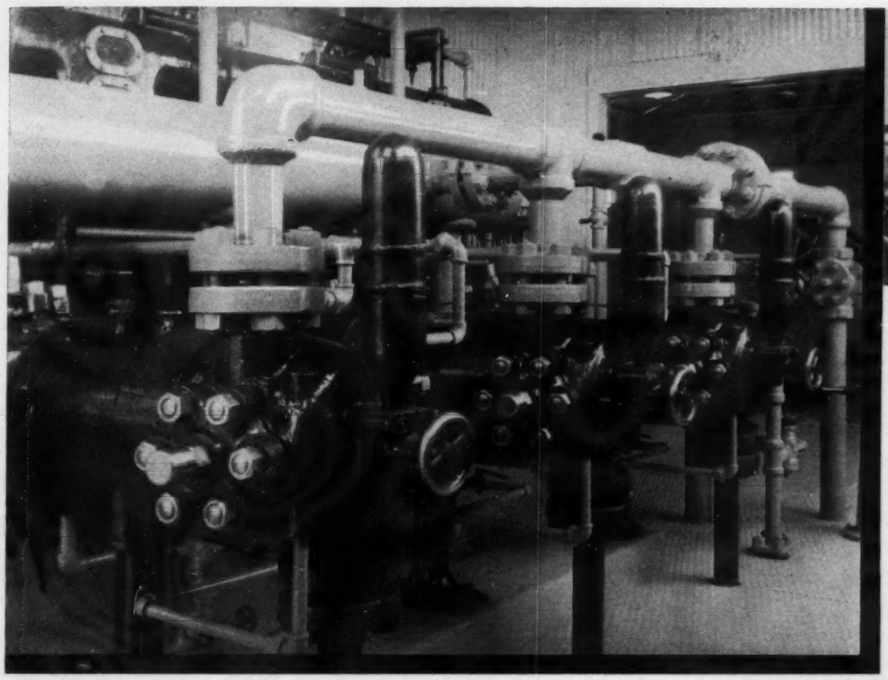
TIGHTNESS—The *only* flexible joint with a 50-year, *proved* record of permanent tightness.

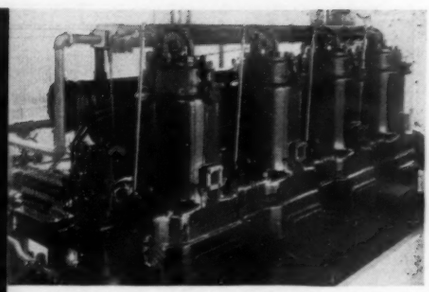


DRESSER PIPE COUPLINGS

FITTINGS?—We make a complete line of Long, Cast, Reducing, and Insulating Couplings; also steel and malleable ells, tees, crosses, etc. Write for our General Catalog Number 36.

DRESSER MFG. CO., BRADFORD, PA. Offices at New York, Chicago, Houston, and San Francisco. *In Canada:* Dresser Mfg. Co., Ltd., 60 Front St., W., Toronto, Ont.





GOLETA, CALIF. — Power and compressor ends of Industrial Fuel Supply Company's Type G-MR 4-cylinder, 2-cycle compressor unit, rated 300 hp at 300 rpm. Single-acting compressor cylinders operate up to 2,000 pounds pressure.

The Right ANGLE

Why G-MR is The Right ANGLE COMPRESSOR FOR YOU!

- Engine is shipped completely assembled.
- One-piece base for entire compressor unit maintains original factory alignment of parts.
- Unit saves weight and occupies half the floor space of equivalent horizontal type.
- Costs of hauling, foundation, housing, and erection are minimum.
- Streamlined scavenging and gas-injection system assure most power from least fuel—hence real economy.
- Fewest parts, simplest operation, least maintenance with 2-cycle.
- Oil-cooled power pistons; complete force-feed lubrication; low consumption of lube oil.
- Genuine Cooper-Bessemer ruggedness, reliability, and long life—proved for 106 years. All iron castings of Meehanite Metal.
- Choice of 2, 3, or 4 power cylinders—150 to 300 hp. at conservative speed of 300 r.p.m.
- Choice of 1 to 4 compressor cylinders, single or multi-stage; any combination of volume and pressures.

SEND FOR G-MR BULLETIN!

THE COOPER-BESSEMER CORPORATION

640 EAST 61st STREET . . . LOS ANGELES, CALIFORNIA

25 West 43rd Street, New York City Mills Building, Washington, D. C. 631 Spring St., Shreveport, Louisiana 201 East 1st St., Tulsa, Oklahoma
Magnolia Building, Dallas, Texas 529 M & M Building, Houston, Texas
Mount Vernon, Ohio — PLANTS — Grove City, Pennsylvania

Calling all Women

A CAMPAIGN WITH AN *Appeal* TO THE LADIES!

Eight Page Tabloid Broadside

Two Special Letterheads

● Universal presents a complete, coordinated sales campaign, including not only a feature range—the Eton Universal—but also a diversified assortment of advertising material, which makes possible a hard-hitting advertising attack on your local gas range market. We suggest that you write for a complete prospectus of the new Universal Fall Campaign—"Calling All Women."

Circular for Enclosure with Invoices

Special Salesmen's Calling Card

Large Display Sales Banner

Assortment of Seven Newspaper Ads

Letter Sticker

Eton Catalog Page

CRIBBEN & SEXTON CO.
700 N. SACRAMENTO BLVD.
CHICAGO, ILLINOIS

Universal Gas Ranges

GAS
OCTOBER, 1939

GUEST Editorial

Our Seal of Approval

A NATIONAL GUIDE

By C. N. LAUER
President, American Gas Association

IN CONNECTION with the recent dedication in Los Angeles of permanent quarters for the Pacific Coast Branch of the American Gas Association Testing Laboratories, I, as president of the American Gas Association, addressed the following telegram to Mr. A. F. Bridge, vice president of the Southern Counties Gas Company and a member of the A. G. A. Executive Board:

> "In these days when the public is increasingly demanding evidence that products offered for sale be built to recognized standards and perform at proper efficiencies, the gas industry can point with pride to the fact that it has been a pioneer in testing its appliances for the benefit of the consumer and was among the first to base those tests on standards established in advance by federal agencies, national technical societies, consumer organizations, gas companies and gas appliance and equipment manufacturers. The dedication of the permanent home of the Pacific Coast Branch of the American Gas Association Testing Laboratories marks another milestone in a movement in the public interest and one that has been of incalulable benefit to both the consumer and the gas industry. In behalf of the Executive Board and members of the Association I extend to you our best wishes for the fullest measure of success."

I hold the belief—and it is shared by many others—that the testing and approval of gas appliances is one of the most constructive movements inaugurated by the gas industry. This is made more and more manifest by the passing of time, particularly the rapid growth in recent years of organized consumer groups who endeavor to safeguard the interests of their members in the purchase of all manner of products.

These groups have multiplifed fast. Most of them are organized along sound lines and are rendering an effective service, cooperating in the meantime with Federal and State agencies, though some few, as always happens, are of questionable sponsorship and intent. These latter are the most vocal of the lot. They openly challenge the advertised claims made by certain manufacturers in behalf of their products, and direct a substantial portion of their fire on the advertising profession itself.

Coincident with the growth of the consumer movement, testing agencies of one kind or another have been established and a wide variety of approval seals have been adopted as visible evidence that the products bearing them conform to certain standards. As a result the consumer groups are more cautious in believing what they read and what the manufacturers of products say in behalf of their products.

We can say with justifiable pride that the gas industry welcomes any inquiry into its testing program with the confidence the trade and the public have in our Testing Laboratories and the Laboratories' Seal of Approval and the Certified Performance Seal and all that they represent.

It is a good time to remember and perhaps convey the word to others that our Laboratories are the largest and best equipped of their kind in the world. Also, that the Laboratories represent a combined consumer-industry movement in cooperation with public agencies which has raised the safety and performance characteristics of gas appliances to the highest points ever attained.

The Seal of Approval has been illustrated in most of the national advertising sponsored by the Association and the meaning of the Seal has been defined in this manner:

> "Appliances bearing this Seal comply with national requirements for safety, durability and efficiency."

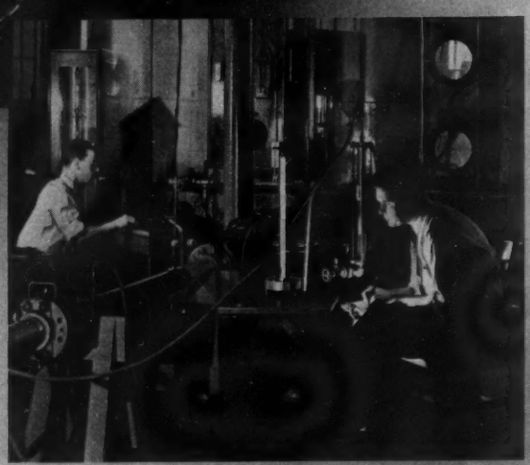
In the current series of national advertising where the CP insignia is illustrated, the following interpretation appears:

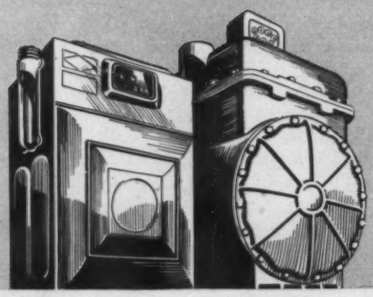
> "This seal on a gas range assures you that you are getting all of the 22 super-performance standards established by the American Gas Association. It signifies the 'Certified Performance' of the range that carries it—whatever make you buy."

The phraseology is clear and concise. No other meaning can be read into it. Thus both seals stand on their own for exactly what is specifically claimed in behalf of them, without technical reservation or qualification. This being the case, both seals are entitled to be accepted by purchasers as reliable and authoritative national guides. As a matter of fact, they are already accepted as such by the gas-using public in the United States and Canada.

Some consumer groups are said to have requested the Government to investigate all approval seals, the representations made in their behalf, and the organizations back of them. If such an inquiry should materialize, we have every confidence that it will redound to the credit and benefit of the gas industry.

Laboratory controlled ... precision built





GENERAL OFFICES • 60 EAST 42ND STREET, NEW YORK, N. Y.

AMERICAN METER COMPANY

INCORPORATED (ESTABLISHED 1836)

1320

THERMALLY *Thinking*

Convention Time

The scent of Fall is in the air, and gas men — like the birds winging their way south — gather their thoughts, bind up their manuscripts, pack up their collars, and hie themselves hence to the nearest convention. It is that time of year when conviviality reigns, when ideas are exchanged, when backs are slapped, and palms crossed —and when the industry takes annual inventory of itself.

One stimulating figure stands out: In the first six months of 1939, 317,000 new customers turned to gas service — over 50,000 each month. What brings about such growth? What created the A.G.A. Laboratories? How did an engineer in New York find out what his brother was doing in San Francisco? Why do we have national advertising? Where was the CP range born?

The answer is simple, obvious — in meeting our brother worker — in giving him our ideas and in taking from him his ideas — in putting the two together and passing them on to another. It is this constant intercourse at conventions between the industry's leaders that materialized the ideas they have conceived, that stimulates them to aggressive action, that puts new ideas in their heads to work toward next year.

One such stimulating convention has just come to a close. Optimism and a sense of healthy growth pervaded the recent 46th Annual Convention of the Pacific Coast Gas Association—reflecting the gaiety, the brilliance, the color of the Golden Gate International Exposition — as 560 registered delegates turned out to salute "Gas on Parade." In his report to the convention, President H. L. Farrar described the year as "one of steady progress," and reemphasized the part that national advertising has played in increasing the industry's customers, in stimulating manufacturers to increase their advertising, in improving the morale of the rank and file within the industry, in creating an improved opinion of the industry's stability among life insurance and financial circles, and in bringing to national prominence and attention the industry's outstanding achievement of the year—the CP range.

This month the industry's thoughts have turned eastward to another great convention and another great spectacle, the New York World's Fair. But even now the sessions gather and words of wisdom are handed down from the rostrum — even now the Fair visitor stands in open-mouthed awe at the towering evidence of industry's relentless progress toward the "World of Tomorrow." Even now we must leave you where you are — thinking, greeting, playing, learning — as a delegate to the American Gas Association's 21st Annual Convention.

Direct Heating

Naturally, as a manufacturer of direct heating equipment, our old friend E. C. Adams, of Pittsburgh, likes the article on direct heating by Messrs. Apmann and Little of Derby, Conn. (p. 22, August *G A S*), and endorses our editorial comments, urging the gas industry to give direct heating some real consideration. We urge this especially in highly competitive territories where marginal differences are the deciding factor in securing the heating load.

A paragraph in Mr. Adams' letter appeals to us as being most pertinent and well worth the attention of gas sales executives:

> "Gas has no monopoly in the economy of direct heating," writes Mr. Adams. "Oil is successfully exploiting the direct heating market on a scale that is amazingly large. The economy of coal direct heating in most coal districts cannot be approached by any other fuel. Right now, the gas industry has a tremendous advantage in being able to successfully promote gas direct heating in competition with coal indirect heating."

Messrs. Apmann and Little definitely proved Mr. Adams' last statement to be true of their territory.

As far as *G A S* is concerned, we have no desire to be labeled one way or the other. Our only concern is to get the business with the tools best suited to bring home the bacon.

Our Guest Editors

We are proud of our guest editors, and equally proud of the opportunity each month to bring our readers the viewpoint of a man or woman whose position in the gas industry adds weight to his words.

A roster of our guest editors, since this valuable and popular feature was started, is a roll of honor and presents a cross-sectional viewpoint of an industry that is anxious to serve the American public adequately and constructively.

It is bromidic, of course, to say that an industry is the shadow of its leaders, but it is nevertheless true, and through our century of existence we gas men have been well led, and traditionally can expect a high calibre of leadership through the strenuous days ahead to the days when the superiority of gas service as a fuel will have general public recognition and acceptance.

In their editorials, our guest editors have stated their views freely. Some have viewed with apprehension, others have criticized, and all, according to their viewpoint, have tried to think aloud constructively for our benefit.

When all is said and done, ideas are the mainspring of an industry. In presenting this month and every month the thoughts and ideas of an outstanding gas industry leader, *G A S* feels it is signally meeting its obligations to those gas men and women who appreciate the value of ideas in their professional development.

Little Brother Helps Out

To our little brother, the Bottled Gas Industry, we must certainly doff our hats and say "Thanks." For the little fellow is growing up, his voice is deepening, his pants lengthening, and it may not be too long before he will be standing shoulder to shoulder with us, staving off the onrushes of our fuel competitors. As a matter of fact (though in some ways we may think of him as a competitor — there's always competition between brothers) he's out there today doing his job where it will do his bigger brother, the Gas Industry, the most good.

In 1938 there were 53,600,000 gals. of bottled gas sold for retail use. In 1938 every fifth new gas consumer turned to bottled gas service. And in 1938 — in the face of Washington's rural electrification program — the bottled gas industry had almost half as many installations as the electric industry!

Yes, indeed, our little brother is fortifying those rural districts, which may someday become piped gas territory, against the electric invasion — he is educating our rural neighbors who may some day come to the city that the modern home is the one equipped with modern gas appliances burning the modern fuel — gas.

Old Age Pensions

We have no quarrel with the principle that modern society should provide for its discards when old age has taken its toll of their usefulness. The higher geared industry becomes, the less individual are our methods. "The old order changeth," and wisely, as a group, we make our provisions accordingly. So, in principle, we approve federal old-age pensions as a preferable alternative to the vagaries of private and public charities, or the poorhouse. But we resent the oft-repeated New Deal implication that it was the villainy of industry rather than the system itself that made old-age pensions necessary.

There are literally hundreds of corporations who have for years extended old-age pensions to their employes.

Recently, it was revealed that the General Electric Co.—and its size ranks it as a grade A villain in New Deal ideology — has one former employe on its pension rolls who has been drawing a disability pension for 23 years, which is two years more than he actually was employed by the company.

Then there is the case of a lady who has just died who retired after 20½ years and drew a pension for 24 years from the same corporation.

All in all, American industry with its highest wage scales in the world has little cause to be conscience-stricken these days If it has been in the wood, industry has shouldered its responsibilities to the best of its ability. As we said above, it is the social system itself, rather than the delinquency of any particular group in it, that has created the need for government old-age insurance.

To See Is To Learn

At least so thinks Larry Ladd, gas appliance salesman for the Southern Union Utilities Co. of Pecos, Texas, who decided while on vacation in Chicago to drive over to Geo. D. Roper Corp. at Rockford and "see just how those ranges I'd been selling were made." Mr. Ladd (and Mrs. Ladd) started at the beginning, the foundry, where burners are cast, proceeded to the main plant and watched the steel parts come into shape; thence to the enameling plant; and finally to the assembly line — but let's use Mr. Ladd's words:

> "Funny — but they start with the base of the crate and build the stove onto that. . . . There were more inspectors than assembly men. Do they watch them close! . . . All along the line each range is tested, from the pilot and the burners to the way the drawers roll and the way the doors shut. When any part has the slightest defect, it is set to one side, where special men are assigned to correct the defect before it is shipped. . . . And so from the foundry to the box car in three hours. Trying to learn in so short a time what it has taken a company 55 years to perfect — I learned about ranges from there!"

Yes, Mr. Ladd, as you say, "you learned about ranges from there." And when you return to Pecos, you will have — in these days of employe education — stolen the march on your company and equipped yourself with the first-hand information to turn out a better selling job. And, chances are, should a point escape you, you will find that Mrs. Ladd (who was with you all the time) will be standing by to refresh your memory. And who can say how far the industry's sales might soar had all salesmen the inquisitive initiative of Mr. Ladd?

Your Salesman's Pay Check

By STANLEY JENKS

JUDGING by the variations one meets, this matter of a salesman's compensation plan must surely rank among the most controversial in the gas utility industry. Hardly any two plans are alike, and yet fundamentally the problem is essentially the same. Maybe I am a typical gas man, for I, too, have a plan of my own different from most with which I am familiar. Again my viewpoint may be a bit different, due to my varied experiences in the gas industry as a utility sales manager, gas appliance manufacturer and former editor of *G A S*. The spectator sees more of the game than the player. Anyway that is my excuse for crashing into print on such a controversial topic in the hope that I might add something constructive.

In considering the average utility sales compensation plan of today, the first thing that stands out is its utter out-of-dateness. It is completely out of line with present day sales conditions. Strong words—and calling for an explanation. Let me ask a question. Why do we sell gas appliances at all? There are two principal reasons:

1. To establish a local quality standard on those appliances that have public acceptance.

2. To pioneer new uses for gas, that is, break down public resistance to any particular application.

Theoretically, such a policy should be the beginning and end of all utility merchandising. In practice, it takes many curious turns and in almost every instance one finds the answer in an antiquated salesman's compensation plan.

There is nothing so constant as change, said a Frenchman. It is particularly true of the gas appliance sales business. The increment load of yesterday is the base load of today, and the base load of today might be relegated to an incremental status tomorrow.

The advent of the gas industry into the fuel business can be dated within the lifetimes of most gas men, and when it was decided that our bread and butter came from cooking and not lighting, there began a long battle to popularize gas for cooking. In those days, with nobody else interested in promoting gas ranges but ourselves, and facing well entrenched coal and wood competition, it was definitely good business to go to extraordinary lengths to merchandize gas ranges, just as the electric industry found it equally good business to give away flat irons to secure an initial domestic load other than lighting. But those days are gone forever. Or are they? Within the last month, I picked up a newspaper in which the gas company was advertising:

(a) That it was gas range headquarters.

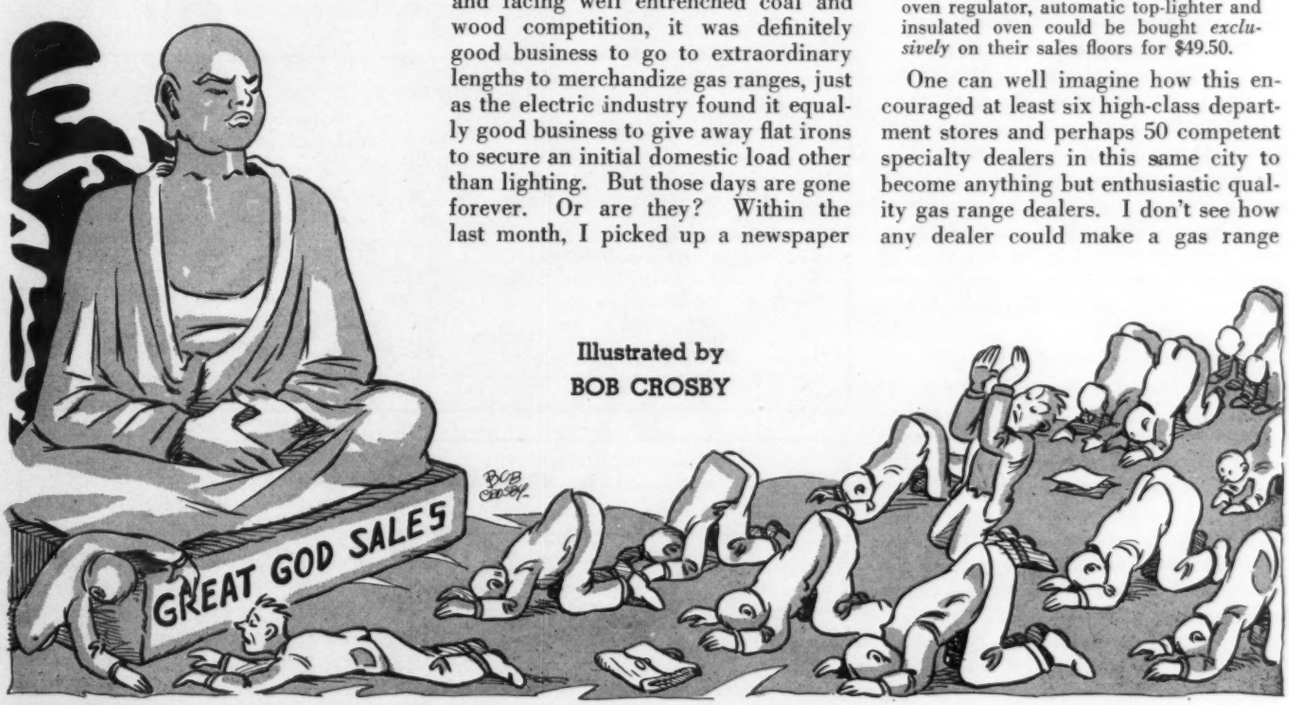
(b) That a substantial trade-in allowance was available for an old stove.

(c) That a very high-class gas range, oven regulator, automatic top-lighter and insulated oven could be bought *exclusively* on their sales floors for $49.50.

One can well imagine how this encouraged at least six high-class department stores and perhaps 50 competent specialty dealers in this same city to become anything but enthusiastic quality gas range dealers. I don't see how any dealer could make a gas range

STANLEY JENKS

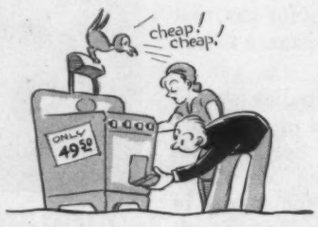
THE PROBLEM of paying the utility salesman has received much discussion. The present article, the first part of which is herewith published is the expression of a man who has wide experience for many years both on the utility and on the manufacturers' sales fronts. The second installment of Mr. Jenks' treatise will be published in the November issue of G A S, and in it the author will describe methods of determining salaries and bonuses for supervisors and salesmen based on added revenue quotas to provide satisfactory earning expectancies, contingent on the load secured from appliance sales. The concluding installment to be published in the December issue of G A S will discuss dealer coordination, a system of dealer bonuses, an analysis of utility-holding practices, and the author's conclusions.—Editor.



Illustrated by
BOB CROSBY

profit in the face of such competition. The logical inference is that the load-building co-operation of a tremendously potential gas appliance sales force is being roughly kicked into the alley. Why? Frankly, I don't know, but I'll bet there's some executive upstairs measuring the effectiveness of his sales department by the *volume* of appliances sold directly.

This practice of measuring gas utility sales departments by the volume of appliances sold per customer, besides being a line-of-least-resistance method, is really a snare and a delusion. It neither measures the merit of a sales department, nor does it indicate the load added with any degree of accuracy. It was perhaps sound 20 or 30 years ago, when only the gas company was interested in or able to sell quality appliances, but the places must be very few and very far between where other outlets for gas appliances cannot sell average quality gas ranges just as well as we can.



I said volume of appliance sales per customer is a snare and a delusion. The larger the number of customers, the smaller the volume of sales per customer becomes. A small town with 1000 customers doing an annual volume of $10 per customer might be doing a terrible job compared with a nearby town of 25,000 customers working selling miracles and only producing a volume of $5 a customer.

The real argument against such a policy, however, is its consequences. The emphasis on volume leads to many undesirable practices. First and foremost is that of putting the sales manager and sales supervisors on a salary and percentage of volume compensation basis. There is a nice kettle of fish immediately, for in practice, it precludes any chance of real dealer co-operation. Let me illustrate. When I was on the manufacturing end, one of my dealers, who preferred our equipment to that wholesaled by a certain gas company, sold a gas boiler in the face of gas company competition. That very evening, an irate gentleman called our dealer up and threatened to stop all his water heater connection work unless he substituted for ours a gas boiler purchased from the gas company, which, incidentally was approved for financing by the gas company, but not wholesaled by it. The irate gentleman who called was the gas company sales supervisor who stood to lose a bonus if our job was sold. Need I pursue the thought any further? In fact, I feel I should not have labored it at all, for to me it seems self-evident that when one pays sales supervisors and salesmen to grab all the business in sight, there is going to be little real co-operation with other manufacturers of quality appliances and their dealers. And surely that is not the spirit of modern day gas salesmanship in the face of intensive competition in today's battle of the fuels. The arguments that only we are capable of selling quality gas appliances is all hooey these days. When the two leading electrical manufacturers are in the market with gas heating equipment, and at least three of the leading electrical refrigerator people are selling high quality gas ranges through their specialty dealer organizations, it ill becomes us to feel that only we have the secret. Or are some of us just defending the bonus we are getting for running every other would-be gas appliance seller out of town? And which in effect, since he has to live by the profits of his busness, drives him right into the arms of our fuel competitors.

For similar reasons, I oppose any sales compensation plans, whether they be salary and commission, straight commission, or drawing accounts against commissions, where any salesman's earnings are mainly contingent on his gross sales in dollars and cents. This is perfectly proper with the private dealer whose one and only profit lies in his volume of sales, but it certainly has no place in modern gas utility sales practice where added load is our objective.

To those who have perhaps concluded that I am going to advocate gas utilities going out of the merchandising business, let me hasten to state that I am 100 per cent against such an idea. Such an extreme is as bad as the other. In fact worse, because the very minute we turn over our new business development to outsiders—and that is what we do when we quit merchandising—we are headed for serious trouble, and our fuel competitors will be presented with another happy hunting ground. There is a happy medium.

What have I to suggest? It is a plan, which is no over-night brainstorm, but the result of several years' observation and study. You shall be the judge of its merit.

Every gas appliance has a definite load value. If it hasn't, we have no business selling it. The A.G.A. in its 1938 rate report by actual field check quotes the following:

Service	*Monthly Load*
Cooking	10.6 Therms
Manual water-heating	9.0 Therms
Automatic water-heating	20.0 Therms
Refrigeration	10.0 Therms

These are subject, of course, to local variations due to climate and living standards of community. In fact, I would prefer, in presenting this plan, to use the figures we established a few years ago in the Northern Indiana Public Service Co. as a basis. Taking

TABLE NO. 1

Appliance	*Annual Load Credit*	*Annual Revenue Credit*
Gas range (replacement)	38 Therms	$10.80
Gas range (new customer)	114 Therms	32.50
Automatic water heater	250 Therms	35.00
Automatic low input water heater	137 Therms	24.00
Tank heater with remote control	100 Therms	15.00
Tank heater	50 Therms	10.00
Home heating job	Estimated	Estimated
Auxiliary space heater	34 Therms	6.00
Gas refrigerator	120 Therms	19.00
Incinerator	10 Therms	3.00

TABLE NO. 2. ANNUAL SALES BUDGET

District	*Canvassing and Soliciting*	*Supplies and Expenses*	*Advertising New Business*	*Merchandising Profit*	*Total N.B. Expense*	*Added Rev. Quota*	*Ratio N.B. Expense to Added Rev.*
A	$32,500	$5,400	$15,000	$3,325	$69,575	$150,000	0.46
B	21,000	2,700	8,300	2,000	30,000	90,000	0.33
C	15,000	1,900	5,800	1,500	21,200	45,000	0.47
D	7,600	900	5,450	1,000	12,950	30,000	0.43

TABLE NO. 3

Item	*Estimated Annual Revenue*
Gas range (replacement)	38 × 20 = $ 7.60
Gas range (new customer)	114 × 20 = 22.80
Manual water heater	50 × 18 = 9.00
Automatic water heater	250 × 16 = 40.00
Refrigerator	120 × 15 = 18.00
Central heating	2000 (ave.) × 8 = 160.00
Auxiliary heating	34 × 15 = 4.70

TABLE NO. 4. APPLIANCE AND ADDED REVENUE QUOTAS

Item	*DISTRICTS* A	B	C	D
Gas Ranges (Replacements)[1]	$26,600 (3500)	$15,960 (2100)	$ 7,980 (1050)	$ 5,320 (700)
Gas Ranges (New customers)[2]	34,200 (1500)	20,520 (900)	10,260 (450)	6,840 (300)
Automatic Water Heaters[3]	40,000 (1000)	24,000 (750)	12,000 (375)	8,000 (250)
Refrigerators[3]	18,000 (1000)	10,800 (600)	5,400 (300)	3,600 (200)
Central Heating[4]	16,000 (100)	9,600 (60)	4,800 (30)	3,200 (20)
Manual Water Heaters, Aux. Space Heaters & Misc.	15,200	9,120	4,560	3,040
Total	$150,000	$90,000	$45,000	$30,000

[1]Estimated 1,600,000 gas ranges will be sold during 1939, or approximately 10.0 per cent of total customers.
[2]Estimated 3.0 per cent increase in domestic customers 1939 over 1938.
[3]2.0 per cent domestic meters.
[4]0.2 per cent domestic meters.

these average load values and using the current domestic gas rates, we established the revenue credits per appliance as shown in Table No. 1.

These or appropriate values should be established primarily as the bedrock of a basic sales policy, the objectives of which are:

1. To promote the sale and use of gas, wherever the company has the service facilities.
2. To promote the sale and use of those appliances (in a combination utility) that will secure for each utility its normal base load.
3. To organize retail sales plans on a basis fair to the customer, to other dealers selling similar appliances, to all responsible manufacturers willing and able to be active in the company's territory and to the company itself.
4. To administer company sales activities, so that the company's public relations shall be constantly built up and strengthened.

The first point for consideration is the market potentialities of the territory itself. This may be one consolidated area, divided into sales zones, or several communities, each with its own sales supervisor, or a combination of both. In this instance, we will assume that our company serves four communities, each with the same gas rate, and each under the supervision of a sales director reporting to a general sales manager.

The communities are as follows:

Community	*Number of Domestic Customers*
A	50,000
B	30,000
C	15,000
D	10,000

According to standard practice, the respective sales supervisors submit their annual sales estimates, but instead of estimating in terms of volume of merchandise sold per meter, or the general sales manager establishing quotas of so many dollars of appliance sales per meter, the quotas, using the above revenue credit tables are established as *added revenues* per meter. Just for the sake of illustration and knowing in practice from past experience the expectancies to be reasonably anticipated, we assign the added revenue quota for the year according to the following figures:

A	$150,000	$3.00 per customer
B	90,000	3.00 per customer
C	45,000	3.00 per customer
D	30,000	3.00 per customer

In practice no attempt would be made to hand out uniform per customer quotas, but as was stated above, the quotas would be based by the sales manager on reasonable expectancies. However, there should be no uncertainty about the cost of getting this business. If, for example, the management is agreeable to spending up to half the first year's revenue to get this added business, we can now take the next step in budgeting the sales program for the year. A typical budget is shown in Table No. 2.

Under such a system of budgeting appliance sales, several immediate advantages are apparent. First, the sales objective in terms of load can be stated directly. In the hypothetical example to follow, the objective is set at an added annual revenue of $3.00 per domestic customer. Second, the constant argument regarding whether such and such an item should be charged to new business or merchandise sales is eliminated. At present, a merchandise sales manager battles constantly with the accounting department to throw all the expense he possibly can into new business to make his merchandise profits look as good as possible, because the management judges him on that score. (Hence the scrap for volume sales, beating down competitive retail sales too.) The ratio of total new business expense to added load is now the measuring stick of the merchandising department's ability. The management has really served notice that so long as appliance sales stay in the black, there will be no executive whip-cracking, if the ratio doesn't go haywire. Such a system also anticipates the oft-repeated criticism from those politically opposed to our merchandising, that we pad our operating expenses (new business) to create a non-operating revenue (merchandise profit) and spot ourselves an unfair advantage at the expense of our consumers. On the other hand, every governing body recognizes the propriety of a utility to spend money to develop its business, and there can be no quarrel with a total new business expense of approximately half the first year's estimated revenue. In fact, I imagine it is considerably less than exists today in most instances, if the real facts are faced.

And now back to Table No. 2. We have the added revenue quotas established. It might be timely to establish the rules under which these quotas are determined. In general, the load will be secured directly by the sales department and by co-operating dealers selling approved appliances, the latter *preferably* not wholesaled by the gas company. The sales policy now is translatable into practice along the following lines:

ADDED REVENUE CREDIT RULES

1. Revenue credits for load-building appliances are established:

   a. As closely as can be estimated an average usage on rates generally in effect throughout the company.

   b. Where usage is dependent entirely on the individual application, we use our own estimate necessary either in selling the equipment or the service.

   c. Only on approved items secured directly by the sales department (or the district manager acting in a new business capacity) and cooperating dealers.

2. Revenue credits cover one year's use only.

3. Revenue credits are only applicable on load-building equipment listed on our standard approved list and are given whether sold by our company or an approved dealer, if sold and installed in accordance with the standard company practices.

4. After one year's use no revenue is deductible on the reversion to stock of any load-building appliance.

5. All net added revenue reported is a basic factor in the new business expense to added revenue ratio, which is used in rating district merchandise sales operations.

6. In connection with the sale of a gas range, a new customer is one who completes a transaction resulting in a net gain of one cooking customer to the company.

7. All established net added annual revenues and the items included in the list are subject to review and revision every December and a new scale for the next year's operations established.

The quota could be determined in this way, and for the sake of illustration we will assume the following hypothetical rates apply in our domestic schedule:

Cooking	20c a therm
Manual water heater	18c a therm
Automatic water heater	16c a therm
Refrigeration	15c a therm
Heating	8c a therm

Based on annual load credits shown in Table No. 1, the annual load credits by appliances is tabulated in Table No. 3.

With the revenue credits shown in Table No. 3, it is now possible to break down the quotas into unit sales. Incidentally, in practice, until experience had been obtained, the unit quotas would probably be set up first and the added revenue quota determined, which is just the reverse of what we are doing in Table No. 4.

(In the next installment to be published in GAS for November, the author describes methods of determining salaries and bonuses for supervisors and salesmen based on added revenue quotas to provide satisfactory earning expectancies, contingent on the load secured from appliance sales.—Editor.)

Determining the Errors of Wet Test Gas Meters

GAS volumes and rates* of gas flow are often measured in a laboratory by means of a wet test meter, with water as the confining liquid. In passing through such a meter, gas takes up water vapor. When completely saturated at a given temperature, the proportion of water vapor to gas is well known. If it is assumed that the gas is completely saturated in the passing through such a meter, the volume of dry gas passed through can be easily and accurately calculated. If, however, the gas does not become completely saturated, the calculation of the volume of dry gas will be in error.

The volume of gas passing through a wet test meter for each revolution of the meter drum depends on the volume of water in the meter. This volume is carefully adjusted during calibration, with the meter accurately leveled, and the level of the water is marked on a gage. During subsequent use, any failure to level the meter before adjusting the water level to this mark, or failure to have the same volume of water in the meter as at calibration, will cause an error in the indication of the total volume of gas and water vapor.

At the request of the subcommittee of the American Society for Testing Materials, which deals with measurement of samples of gaseous fuels, F. A. Smith and J. A. Eiseman, of the Bureau's gas chemistry section, undertook to determine how nearly the gas passing through a laboratory wet test meter (at the usual rates of flow) becomes saturated with water, and the magnitude of the error in indication resulting from any lack of saturation. A determination was also made of the error in the indicated volume resulting from a failure to level the meter before use.

The tests, which are reported in RP1238 in the September Journal of Research, indicated that dry air became over 98 per cent saturated on passing through the meter, at all practicable rates of flow. The error in the indicated volume, caused by the lack of complete saturation, was found by direct determination to be less than 0.2 per cent. It was also found that a relatively large and easily noticeable departure of the meter from level introduced no error larger than 0.1 per cent in the indicated volume as long as the correct volume of water, determined by calibration, was maintained in the meter. On the other hand, after the proper water level had been determined by calibration and its position marked in the gage, setting the water level to the mark when the meter was not accurately leveled altered the correct volume of water and introduced an error of the order of one per cent.

In general, the tests showed that errors in the indication of small laboratory wet-test meters arising from incomplete saturation of the gas, or from inaccurate leveling, are small.

*Reprinted from the *Technical News Bulletin*, September, 1939, published by the National Bureau of Standards, Washington, D. C.

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Members of A.G.A. Urged To Tie In With Ad Campaign

The A. G. A. fall advertising campaign on CP gas ranges will be based upon the theme, "Save While You Cook," and featured will be "Time Saving," "Food Saving," and "Fuel Saving," all tying in with CP publicity.

A sales plan book, based upon "Save While You Cook" was mailed to 20,000 retail dealers and utility executives in August by the Association of Gas Appliance and Equipment Manufacturers, and through its domestic gas range committee the A. G. A. is urging member companies to engage in a 13-week radio spot announcement program that will tie in with the CP slogan and the Association's national advertising schedule that will appear in October, November and December in an effort to make local outlets conscious of the vast gas range market that is available among eight or nine million owners of obsolete ranges that according to estimate, are still in use in this country.

■ ■

Holding Company To Sell Southern Properties

The Associated Gas and Electric Co., Ithaca, N. Y., has filed with the SEC its intention to sell or barter its southern group of properties for the purpose of unifying operations. The southern properties, valued at approximately $135,000,000, lie in North Carolina, South Carolina, Georgia, Florida, Kentucky and Tennessee.

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New Gas Line For Kent, Ohio

A new high pressure gas line and regulators have been installed in Kent, Ohio, by the East Ohio Gas Co. The project involved an expenditure of $15,000.

An airplane picture of the New York World's Fair, showing a part of the main exhibit sector and International Area. In the foreground is the Transportation Zone. Across Grand Central Parkway are the buildings in the main exhibit area. In the background are the U. S. Government Buildings, Court of Peace and Lagoon of Nations with foreign pavilions filling out the area.

The Convention and the Fair

PROBABLY there has never been staged a national convention under such appropriate circumstances and in such a dramatic setting as are those which will surround the 21st annual meeting of the American Gas Association at the Hotel Pennsylvania, New York City, October 9-12. Not only will the New York World's Fair be of universal interest to those who attend, but more specifically they will come to know and to better understand the important part played by gas service in creating this high degree of beauty and perfection. They will see in today's "World of Tomorrow" how practical and invaluable gas is to the world's future domestic and industrial development.

Figures may verify this statement but only those privileged to see for themselves will be able to fully realize its full truth. As for the figures, more than 87 per cent of all the buildings occupied by the 211 exhibitors use 3249 separate pieces of gas-fired equipment, and these consume 65,000,000 cu. ft. of metered city gas each month. The uses to which this gas is applied cover a wide range of application—from standardized requirements to unusual jobs never before attempted.

Ample opportunity to observe just how importantly gas has figured in the success of the Exposition will be given all delegates on the afternoon and evening of the first day of the convention, Monday, October 9. This day has been designated Gas Industry Day. A special program has been prepared and delegates will be conducted by guides to the outstanding exhibits.

The general sessions of the convention will include programs of wide appeal and of vital interest to those who will attend from all parts of the country. The chairman of the program committee is George F. Mitchell, president of the Peoples Gas Light and Coke Co., Chicago. Three consecutive morning sessions will be held beginning on Tuesday of convention week. These sessions will be devoted to broad problems of national interest to the gas industry. The sectional sessions will be confined to specialized subjects.

The first general session will be opened by Conrad N. Lauer, president of the American Gas Association and president of the Philadelphia Gas Works Co. He will give an address on the state of the gas industry which is expected to set the convention keynote.

One of the featured speakers outside of the industry will be Thomas H. Sanders, professor of accounting in the graduate school of business administration, Harvard University, who will speak on "Reality in Accounting," discussing the present complicated problems of public utility accounting.

Advertising, so vital a force in the progress of the gas industry during recent years, will be discussed by James F. Pollard, president of the Seattle Gas Co. The closely allied subject of sales will be handled by A. F. Rice, manager of market development of the Southern California Gas Co., in his talk titled, "The Sales Outlook." The development of gas appliances and a new approach to the domestic mass market will be stressed. "Technical Developments and Their Effect on the Gas Industry" is the subject that has been chosen for a paper by Herman Russell, president of the Rochester Gas & Electric Corp., and past president of the A.G.A. He will point out the improvements that have been made recently in methods of gas manufacture, the distribution of both natural and manufactured gas, and the effects upon costs.

Thomas R. Weymouth, vice president of Columbia Gas & Electric Corp., New York, as chairman of the Natural Gas Section, has arranged a public relations forum, at which the principal speaker will be B. C. Adams, vice president of The Gas Service Co., Kansas City. Other executives to take part will be E. M. Tharp, vice president and general manager of the Ohio Fuel Gas Co., Columbus; R. E. Fisher, vice president, Pacific Gas & Electric Co., San Francisco; and

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Charles Evans, Arkansas Power & Light Co., Pine Bluff, Ark.

Miss Gladys Price, home service director for Southern California Gas Co., Los Angeles, will preside at the home service breakfast meeting at the Hotel Pennsylvania on Wednesday morning at 8:30.

While the prime objective of convention delegates will be attendance at the sessions, there is so much of practical application of gas on the Fair grounds and so much else of general interest that every available minute of the time of delegates may be interestingly and profitably employed.

For the Abundant Life

The high concept of what the New York World's Fair should do in attempting to demonstrate—for tomorrow—"a happier way of American living, an improvement of human relations through the interdependence of man, and a lift in the standard of our national living" is so closely identified with what gas is doing in a practical way to raise our living standards that all delegates must surely feel the spirit of progress with which they are so closely associated wherever they go upon the grounds.

Possibly the most prophetic and interesting of all attractions is the theme exhibit, the model city called "Democracity," designed by Henry Dreyfuss to show the possibilities of improvement in design of future cities. In the brief space of six minutes, on one of the two moving platforms inside the Perisphere, one can look down upon a vast spectacle of 24 hours of life in this model city. The central city has a huge transportation center where ocean liners, limited trains, airplanes and dirigibles come to a single terminal. The central city will serve a million people, with a working population of 250,000, yet where no one will sleep at night. Homes, apartment houses and hotels are built on the outer rim, adjacent to great park systems. Surrounding the city, but separated from it by a green belt of farms and parks, are the industrial towns, or decentralized factory centers, each one comprising a complete unit of factories, homes and schools. Between the factory towns and the central city is a 30-mile green belt devoted to agriculture. The entire scene, so practical and yet so ideal, shows vividly what intelligent planning and collective foresight can do for future generations.

In keeping with the trends of today, color plays a big part in the displays at the Fair. Possibly the greatest of all the color effects is the Lagoon of Nations display. It is the Fair's feature extravaganza in which huge gas flares battle giant fountains in a breathless spectacle. While the official Fair colors are bright blue and orange, every shade and variety of color meets the eye over the grounds, from the white Trylon and Perisphere in the center of the Fair to the limits of the fan-like streets branching off therefrom, each of which has a color scheme of its own. The lighting effects, so closely allied with the color scheme throughout, have been inspired by such recent innovations as fluorescent tubes and capillary mercury tubes. Light is treated as a part of architectural design, and differs greatly in effects by day and night.

A colorful folk dance of dancers in native costume was a feature of the Swedish Day ceremonies at the 1939 New York World's Fair.

The attractions at the Fair are almost limitless in number and variety, but for delegates to the American Gas Association the industrial exhibits will probably hold greatest interest.

In addition to the exhibits where gas plays the all-important part and which are elsewhere described, there are ones of special interest which cover machinery, railroads, oil, pottery manufacture, automobiles and innumerable others. The so-called "focal" exhibits are largely dramatizations of fundamental functions in the modern world—the inter-dependence of all men, industries and agencies engaged in producing goods upon which the world depends for comfort and welfare. There are the stories of food, transportation, communication, production and distribution, community interests, science, education, medicine and public health. Each focal exhibit is an introduction to the exhibits in a given zone.

Foreign Buildings

Twenty-two foreign governments have their own buildings at the Fair, with displays which tell of their industries and social lives. Sixty foreign nations are participating in some form, those not having their own buildings exhibiting in the Hall of Nations. The foreign pavilions are concentrated east of "Rainbow Avenue" near the "Court of States," "Gardens on Parade," and "Town of Tomorrow."

The "Court of States" includes the exhibits of 33 states, reflecting three colonial architectural influences—English-Georgian, French and Spanish. Reproductions of historical scenes and events are outstandingly noteworthy and artistic masterpieces, gathered from all over the world, are priceless.

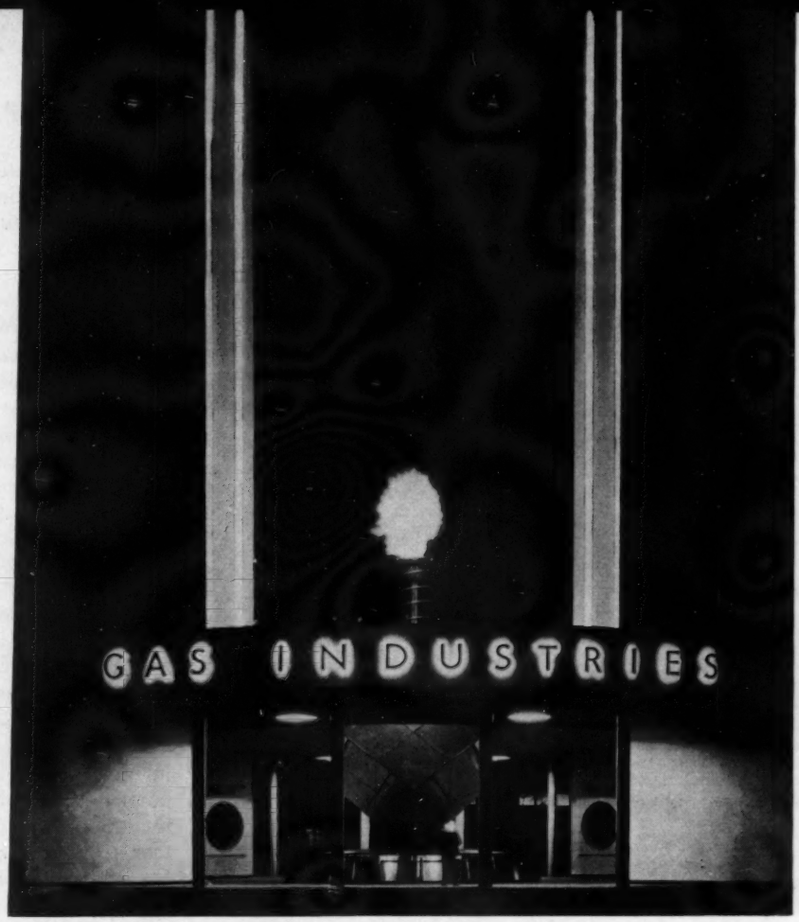
The New York state building and the New York city building are permanent structures, and the Fountain Lake amphitheater, with a seating capacity of 10,000, will be used after the Fair, as it is now, for open-air operas, pageants, musical shows and concerts.

The amusement zone has English, Cuban, South Sea and old New York villages, besides the night clubs and many "breath-takers," and whether the visitor seeks fun or instruction, relaxation or inspiration, it all can be found within the limits of this great exposition, truly a "world of tomorrow," displaying in gorgeous colors its scientific innovations to the world of today!

Gas Tells Its Story

By HUGH H. CUTHRELL

President,
Gas Exhibits, Inc.



At the Industry's impressive exhibit, gas flares its bright message against the black of night.

THE eyes of the gas industry are turned toward New York City where this year's convention of the American Gas Association is being held this month. The convention program includes a visit to the World's Fair which will conclude its first season at the end of this month. At this Fair the participation of our industry has been successful in an unprecedented degree. We have an attractive exhibit in an important sector of the Fair grounds. We have sold gas as it has never been sold in any previous exposition. As a result gas has truly dominated the World's Fair and has proved to business and industrial leaders and the public that our service is essential in the World of Tomorrow.

Gas participation in the World's Fair has been two-fold. The first has been an exhibit which presents the story of gas service—its fuel and appliances—in a manner designed to impress the public with the ability of the gas industry to satisfy their needs today and tomorrow. The second method of participation has been utilization of gas fuel for a variety of purposes, thus showing in actual operation the versatility of our product.

Nationwide publicity has resulted from our participation in the New York World's Fair. From the very outset, even before ground was broken at the Fair site, a coordinated intensified campaign was being conducted to enlighten the public as to the dominant place of the gas industry and its fuel in this great exposition. Every new development, each degree of progress in the erection of the exhibit group was made known to the nation through its press. As the industry made deeper inroads in the Fair as a whole and its fuel assumed a greater importance, so did the extent of this campaign increase.

Newspapers in every state of the Union and those of foreign countries, leading class magazines, business and technical journals, gas and allied trades publications, the radio, newsreels, travel booklets, steamships, bus and railroad guides, and other news media have carried words and pictures calling attention to our industry's World's Fair prominence. There has been collected in several volumes clippings of news stories and features favoring the gas industry, which have appeared in daily newspapers and in other publications. Combined circulation of these stories in newspapers alone exceeds 150,000,000. This represents a news coverage that has penetrated into every section of the nation and which has reached every category of American life.

Our exhibit is divided into six parts, as follows: (1) Court of Flame; (2) Exhibit Hall; (3) Court of Flame Restaurant; (4) Homewood, the all-gas home; (5) Theatre, and (6) Court of Flame Club.

The Court of Flame Club is located above one wing of the building. Its members consist of persons in the gas industry. It provides a place for members to use as their headquarters where they may take friends for refreshments or a meal.

The Court of Flame symbolizes gas utilization in the World of Tomorrow. It is the focal point of the gas exhibit, presenting our industry to the public in a dynamic and dramatic manner. From it at night rise the varied flames which serve as a beacon, guiding visitors to the exhibit. In the daytime, the huge glass cube in the center reflects the sun in dazzling fashion as well as captures the attention of cam-

Life-like puppets perform afternoons and evenings, giving operatic presentations. The 50-piece puppet orchestra completes the illusion.

era fans who are provided with a variety of angle shots.

The glass cube in the center is 1000 cu. ft., representing the unit of measure in the gas industry. This cube is balanced on one point with a huge flame projecting vertically from its apex. From this cube rises a towering gas torch. On the platform which supports this cube are designs indicating what 1000 cu. ft. of gas mean in cooking, refrigeration and water heating in the World's Fair area.

Enclosing the Court of Flame are four 100-ft. pylons which are called Towers of Flame since ascending up them, at night, are columns of flame which rise into the sky to blend with the flame from the cube. At the base of each tower is an effective diorama depicting one of the four major domestic gas uses—cooking, refrigeration, water heating and house heating.

Main Exhibition Hall

Directly opposite each other, across the Court of Flame, are the entrances to the theatre and to the main exhibition hall. In the former the public can attend the free performances of the Victor Puppet Opera Company, which has been a distinct hit at the Fair. In the exhibit hall the visitors see the displays of gas equipment manufacturers and learn how our industry is prepared to meet their needs with carefree, automatic service. Also in the exhibit hall are presented the charming cooking discussions and demonstrations of George Rector, the gas industry's host.

The puppet opera presentations consist of abridged offerings for the afternoon performance and full length operas in the evening. The puppets appear as real, live people, each with a definite personality and charm. Even a 50 piece puppet orchestra is presented to lend added realism to this educational and entertaining presentation of the gas industry.

In the exhibit hall 21 equipment manufacturers present their products in attractive settings. Sound, light, color and motion are utilized throughout the exhibits. Some use all four methods in presenting the story of their product and its ability to meet the public needs in superior fashion.

The Court of Flame restaurant is an attractive modernistically designed establishment with an open kitchen. The restaurant proper seats 400 persons while additional space is provided in an outdoor restaurant and a sidewalk terrace. In the restaurant proper there is a large circular bar with an elevated platform from which entertainment is furnished the diners. The restaurant's kitchen is all-gas, our fuel being utilized for every possible purpose. Here, also, is one of the three places at the Fair where commercial gas refrigeration is used. The Court of Flame restaurant, with its open kitchen, presents a real idea of how gas-equipped restaurants operate.

In a tree-shaded patio, between the restaurant and the Court of Flame, is an exhibit which has attracted considerable attention from the public and from leading women who influence public opinion. That exhibit is Homewood, the All-gas Housekeeping Home, which represents the viewpoint of a noted American authority—*Good Housekeeping* Magazine.

This attractive home is a dramatic demonstration of what a house can be when gas is the fuel for house heating, air conditioning, water heating, refrigeration, cooking and laundering. This home is one of the outstanding ones on the Fair Grounds. Others are located in the Town of Tomorrow, including three which use gas for the "four big jobs." These three are the Dual Duty House (House No. 1), the Small Home of Wood (House No. 6) and the Johns-Manville Triple Insulated House (House No. 15).

For the purpose of presenting the utilization of gas fuel at the Fair it is better to view it from two standpoints—the pre-Fair period and the six months of the Fair. During the former a large volume of gas, principally for space heating, was sold by The Brooklyn Union Gas Co. and the Consolidated Edison Co., the two gas utilities serving the area covered by the Fair Grounds. The actual sales during the pre-Fair period amounted to 170,000,000 cu. ft. of gas, considerably higher than the amount anticipated. Since the start of the Fair sales have averaged 65,000,000 cu. ft., which is definite indication of the large use of gas in the World of Tomorrow.

Gas for Space Heating

The large pre-Fair space heating load points to the possibilities awaiting in this field. The load for protection heating during the coming winter will emphasize further the opportunity for the gas industry in space heating. Last winter gas heated practically every building from contractors' shanties to the Administration Building. Approximately 250 unit heaters were in use during the pre-Fair period. Had all of them been used at one time, there would have been a maximum connected load of 93,000 cu. ft. per hour. That gives an indication of the extent to which gas was used for space heating before the opening of the World's Fair.

During the construction period gas heating contributed to the progress of the work because of the flexibility of the gas-fired unit heater used as a salamander. As the work progressed these heaters were moved from section to section. They were used to warm and dry the floors and walls, then the

plaster and finally the paint work and interior decoration. They expedited these drying operations by circulating the air at a rapid rate and at the same time they contributed to the comfort of the artisans employed in the building.

All this heating will serve as a benefit to the gas industry. It has already developed for our industry valuable contacts with the leading architects and engineers in the country. To them the cleanliness, adaptability and flexibility of gas for heating has been a revelation. They form a body of the important public which can be nationally influenced toward gas fuel usage. To get the full benefit of this it will be necessary for our industry to promote gas space heating nationally and for individual companies to follow through locally with the message of gas's superiority for space heating.

In considering the utilization of gas fuel during the six months of the World's Fair space prevents a full description of the volume and variety of use. To obtain a good general idea and to appreciate properly the versatility of gas fuel I recommend the broadside compiled by the Publicity Committee of the A.G.A. which has this pertinent paragraph.

Versatility

"So versatile is gas that in the 'World of Tomorrow' we find it doing hundreds of special jobs in addition to its 'mass uses.' Gas smokes Swift's frankfurters . . . vulcanizes Firestone's tires . . . bakes Continental's bread, Wagner's pies and Drake's cakes . . . cooks the popcorn, taffy and pretzels . . . washes Coca Cola's bottles . . . melts, cuts, spins and works glass for Glass, Inc., and Ancient Glass Blowers . . . roasts Standard Brand's coffee . . . fires the famous Fiesta ware (bisque, glost and decoration) for U. S. Potters . . . pasteurizes Borden's milk . . . incubates Dr. Couney's babies . . . regulates tobacco moisture and heats glue for American Tobacco . . . . runs Ford's historical Edison generator . . . makes the mist for Victoria Falls . . . steams Old New York's barber shop towels . . . presses the Army's pants . . . heats flasks and autoclaves in several laboratory displays . . . solders in the World's Fair Shops . . . and even—with the finishing touch—incinerates used Fair tickets."

The foregoing merely suggests how extensively gas is used by a variety of interests. While it is impractical to go into a discussion of them here, it is well worth our while to ponder the potentialities of one of these uses. That use is for water heating. To get an idea of the possibilities for future load in this field consider the fact that 500,000 gals. of water are being heated daily at the Fair. This is mainly for cleansing and sterilizing dishes and glasses in the restaurants, sandwich bars and food stands, but there is also a substantial amount used for ordinary purposes.

Having gas satisfactorily perform the function of heating water has been an enviable accomplishment because of the conditions existing and because of the influence which it may have throughout the country. I refer to the World's Fair regulation concerning 180° water in restaurants which is rigidly enforced throughout the fair grounds. This requirement is becoming a goal of health authorities who are seeking similar regulations in cities and states all over the country.

Because of the experience at the World's Fair we know that gas can dependably supply hot water at 180°. And the World's Fair provides conditions which are not faced in hotel and restaurant fields. Instead of the ordinary lunch and dinner peaks when hot water is required in volume with a definite lull in between, the peak at the World's Fair practically extends from lunch to after-dinner time. This results from the steady stream of customers to restaurants. They eat when they feel like doing so and when they think they have time.

This situation puts a strain on the equipment and fuel which heats the water. Yet due to the flexibility of gas we are able to meet these severe conditions at the Fair. In fact should the demand become so great that water runs out we can conveniently install additional equipment the next day. The speed with which this can be done and the scarcity of large space in the restaurants have contributed to making gas universally used for water heating at the Fair.

The exclusive use of gas for heating water in restaurants, the dependability of gas service, the ability of our fuel and equipment to supply and maintain 180° water, the increasing satisfaction of hotel and restaurant men with gas heated water are among the advantages resulting to our industry at the Fair. These advantages can be applied nationally.

Commercial Uses

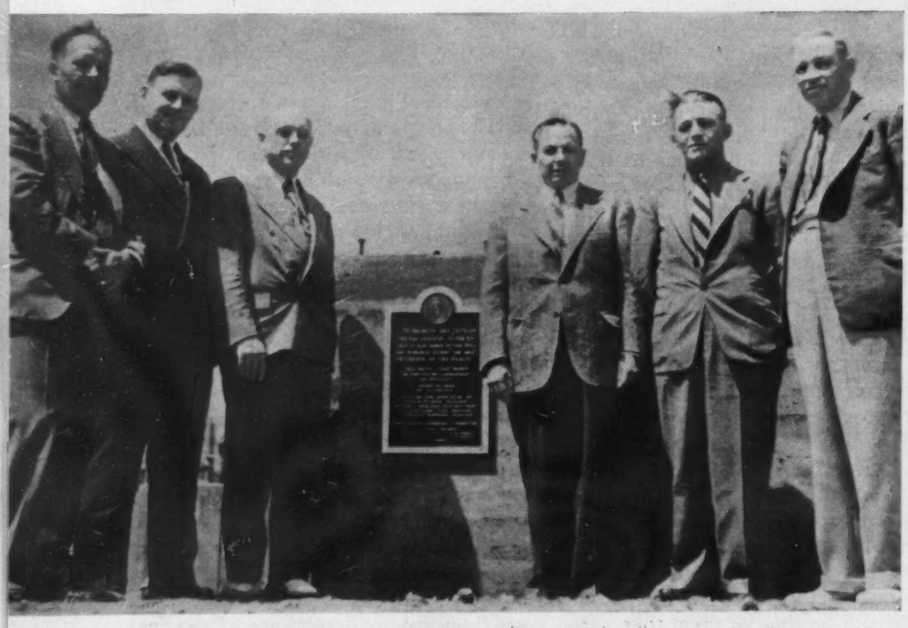
Gas also definitely demonstrates its superiority over competitors in the restaurants at the World of Tomorrow. There is ample evidence that gas is the essential fuel in the restaurant of today and tomorrow. This is a definite accomplishment which can be used advantageously with our hotel and restaurant customers. It demonstrates the opinion held about gas fuel and gas service by the leading hotel and restaurant people in the country. It should supply a definite impetus to our efforts to promote increased gas load in the hotel and restaurant field.

This impetus is also provided in other fields. Our industry has seized the opportunity of demonstrating the superiority of its product in the greatest market place ever known. We have taken a major step with our participation in the World's Fair. It is now up to us to follow through with consistent and intelligent use of the asset provided by the dominance of gas fuel at the New York World's Fair.

"Homewood" is the model house on the Fairgrounds, where gas rules supreme in its use for air conditioning, water heating, refrigeration, cooking, and laundering.

GAS Camera

THE LAW OF averages certainly was not working (or was it?) that eighth day of August when Mrs. Bess Arnold Ross drove her car all the way from Long Beach, Calif., nearly 100 miles distant, to arrive at the precise spot at the precise moment on the San Bernardino mountain road to Lake Arrowhead when a runaway string of gas pipe, 1100 ft. long and weighing six tons, released by the freakiest of accidents, came hurtling across the highway from the crest above. It had broken loose from the hoist of the Pacific Crane and Rigging Co., contractors for the Southern California Gas Co. Mrs. Ross was killed instantly, a passenger in her car was severely injured, a workman's back was broken, and a spectator died from the shock of witnessing the accident. The tragedy car at right. (Photo, courtesy of Los Angeles Times.)



AMERICAN GAS ASSOCIATION, utility company and gas appliance manufacturing executives who were present at the dedication of the new Pacific Coast Branch Testing Laboratory, 1425 Grande Vista Street, Los Angeles, on August 31, included (shown above, left to right): F. O. Suffron, American Gas Association; W .H. Vogan, supervisor of Pacific Coast Branch Testing Laboratory; Harry L. Masser, vice president So. Calif. Gas Co.; A. F. Bridge, vice president Southern Counties Gas Co.; E. L. Payne, president Payne Furnace and Supply Co.; R. G. Logue, vice president Ward Heater Co.

MAYOR SCHULTE (above) turns the valve which gave Manly, Iowa, its first natural gas. With the mayor are Leo Davey (left), secretary-treasurer of the Peoples Gas and Electric Co., and T. L. Connor (center), gas superintendent. Mayor Schulte's home was the first to have gas service for cooking purposes in the city.

THE EXECUTIVE BOARD of American Gas Association meets at the Association headquarters, New York City, on September 12 to discuss the October national convention: Seated (left to right): Vice President T. J. Strickler, T. R. Weymouth, George S. Hawley, C. E. Paige, Managing Director Alexander Forward, President Conrad N. Lauer, Vice President Walter C. Beckjord, George F. Mitchell, N. T. Sellman, Marcy L. Sperry, L. B. Eichengreen, Davis M. DeBard, F. M. Goodwin, D. W. Harris, Merrill N. Davis. Standing (left to right): Counsel Randall J. LeBoeuf, Secretary Kurwin R. Boyes, Otto Snyder, Treasurer E. R. Acker, H. A. Ehrmann, C. A. Tattersall, and Frank H. Trembly, Jr.

OVERCOATS FOR REGULATORS

By ROBERT M. HUTCHISON

Chief Engineer, Houston Natural Gas System

IMPROVED drilling methods and man's insatiable desire to explore have brought many changes in the oil and gas industry. Deep drilling has produced pressures undreamed of a few years ago and those who scoffed at the novice when he called his associates and excitedly informed them "that gasoline was going over the top of the rig," little thought his statement, born of ignorance, would come true. But come true it did and those of us who have dealings with distillate wells, wherever located, know how true.

R. M. HUTCHISON

The reduction of pressures from three, four, or even five thousand pounds presents very little difficulty when gas is dry, but the majority of the high pressure wells now being produced contain liquid and moisture in varying amounts and therein lies the trouble.

The Greatest Recovery

According to the theory of Retrograde Condensation, the greatest condensate recovery can generally be obtained at pressures ranging from 800 to 1000 lbs., so it is therefore advantageous to operate within that range when possible. This does not mean that all the liquid will condense within that range because any pressure change from that existing in the reservoir will create a condition under which those hydrocarbons whose dew point has been reached, will condense.

This indicates a possible greater liquid removal by means of stage reduction of pressure. Knowing the initial pressure at the well head and the resulting pressure to be secured, it is possible to determine the most efficient intermediate stage pressures at which to operate in order to remove the maximum amount of liquids from the gas. The maintenance of these pressures can be assured by the selection of the proper pressure reducing equipment, and if it were not for fluctuations of temperature, gas velocity, and what not, pressure reductions could no doubt be made in many instances without the formation of hydrates and without employing heat, dehydration or refrigeration.

Dehydration and refrigeration probably offer the most positive methods, but usually the cost of the necessary equipment is high and the plants also need constant attendance. Such expenditures can no doubt be justified when large gas volumes are to be handled, but for small deliveries it is a different matter and the operator accordingly resorts to the use of heat which, if properly controlled, will prove very satisfactory.

Overheating is objectionable in that it reduces condensation at the point of pressure reduction and transfers it to the pipe line if the gas is later cooled in transit. This occurrence probably will still not be objectionable if the main line pressure does not exceed 250 lbs.

The foregoing explanation has been made to show the value of making a study of the gas, operating conditions, and atmospheric temperatures before beginning the design of a regulator station to be used in reducing the pressure of a so-called distillate well, when the gas is to be used for distribution to domestic and industrial users.

An installation has recently been completed on a well which produces three or four barrels of distillate and about a barrel of water per million cu. ft. of gas operating at 1750 lbs. pressure, a description of which will illustrate the application of the theories referred to in the preceding paragraphs.

• **THE PRINCIPLES of retrograde condensation are becoming increasingly important and better understood. Supplementary material on this phase of Mr. Hutchison's article was published in an article by Vaughn (G A S, July, 1939, p. 36). In further connection to the portions of this article devoted to hydrates we list articles published this year in G A S by Laulhere and Briscoe (September, p. 21); Powell (September, p. 39); Thompson (August, p. 25); Clark (June, p. 29); Hammerschmidt (May, p. 30).—Editor.**

The design of this station was influenced by the following data:

Gas, 96.3% Methane.
Well head temperature, 87° to 94° F.
Pressure reduction desired, 1750 lbs. to a range from 125 to 200 lbs.

According to the research of Deaton & Frost[1] a natural gas of practically the same composition would not form hydrates at 200 lbs. pressure if the temperature exceeded 35° F. and as the temperature reduction due to expansion of gas is roughly 35° for each 1000 lbs., it was decided to build the station in steps in order to determine the effect of atmospheric temperature changes because with a gas temperature of 87° F. at the well head, calculations indicated a temperature drop of 47° F. when reducing the pressure from 1750 to 400 lbs. This signified a probable hydrate formation.

The Assembly

Using three stage separation and pressure reduction, the assembly consists of a separator which removes whatever liquid is contained in the gas as it comes from the well, a water heater, then a regulator making the first reduction from 1750 to 825 lbs., a second separator, a second regulator reducing from 825 lbs. to 380 lbs., a third separator, a series of drips, an orifice meter setting and a final regulator which reduces the pressure from 380 lbs. to those ranging from 125 to 200 lbs. (See Fig. 1.)

All of this assembly is arranged in series and thermometer wells were installed so that a complete set of readings could be obtained for each change of condition as far as the downstream side of the second regulator.

The station was put into operation without the heater in service and hourly temperature readings were recorded on all thermometers. An initial gas temperature of 87° F. at the well head produced a gas temperature of

[1] *G A S*, June, 1938, p. 31.—W. M. Deaton and E. M. Frost, "A Study of Gas Hydrates in Natural Gas Pipe Lines."

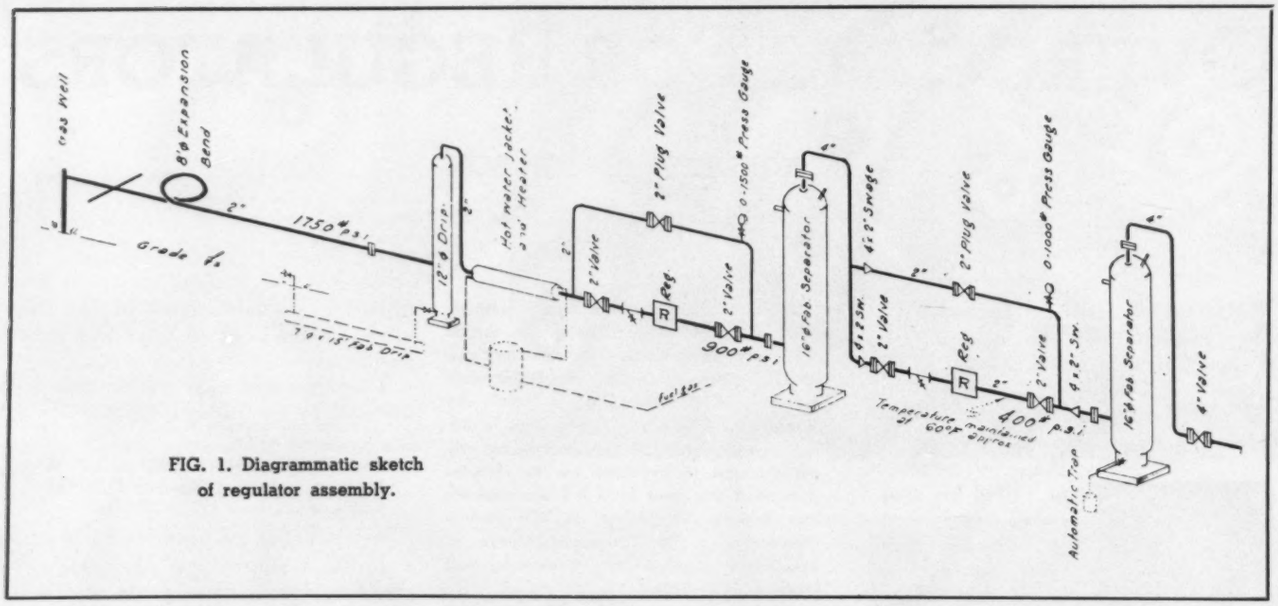


FIG. 1. Diagrammatic sketch of regulator assembly.

from 37° to 40° F. at 380 lbs. (a point just downstream of the second regulator) providing there was no great fluctuation of atmospheric temperature. A heavy shower which occurred one afternoon about 4:00 p.m. caused the atmospheric temperature to drop to 69° F. and the evaporation of the water on the outside of the separators and pipe lines caused a still further temperature reduction, hydrate formation and frozen regulators being the result. The gas temperature at the downstream side of the second regulator was 32° F. when the freezing occurred.

Overcoats for Pipe Lines

This was proof positive of the effect of atmospheric temperature changes on the operation of the equipment and so it was decided to insulate the whole setting from one end to the other. The insulating material used on the equipment was rock cork pipe coating of ice water thickness. As this material was exposed to the atmosphere, the pipe covering was water-proofed with zero seal and the straight runs of pipe were also covered with a 27 gage galvanized iron. In other words, overcoats were put on the separators, pipe lines and regulators. This was done in order to conserve the natural heat of the gas coming from the well, and to protect the setting from the influence of sudden atmospheric temperature changes. The influence of the insulation was very apparent.

The temperature of the gas at the downstream side of the second regulator, through which the pressure was being reduced from 825 to 380 lbs., immediately dropped, thus indicating the absence of atmospheric influence. This lower temperature guaranteed a more efficient liquid separation and was very desirable if hydrate formation could be prevented.

It was, therefore, decided to operate the station until freezing occurred so that the hydrate formation temperature could be determined. During the test, temperatures as low as 20° F. were recorded without freezing, but later, due no doubt to increased gas velocity, freezing occurred at 25° F.

When this took place, the heater was lighted, and as a result, the station became self operating because a gas temperature high enough to prevent hydrate formation, regardless of conditions, can now be maintained.

Thermostat Used

The heater consists of 30 ft. of 2-in. pipe connected with return bends and enclosed in a jacket of 12-in. pipe 9 ft. 6 in. long. A booster type water heater is connected to the jacket so that water will circulate through the system by convection. A thermostat, inserted in the 12-in. jacket and attached to the gas burner is set so that the water temperature will be sufficient to heat the gas to a point high enough to prevent hydrate formation. In this particular case the gas is heated to 119° F. and cooled by expansion to 60° F. at 380 lbs. pressure, a point well above the hydrate formation temperature.

A three day rain caused the temperature to drop only two degrees at this same point, although the gas temperature from the well was lowered about seven degrees.

The station therefore is dependable enough to be left without a constant attendant, a practice that would be considered extremely risky without controlled heat.

Temperature Variation Low

Recording thermometers have now been installed to register the temperature of the gas at the well head and also at the downstream side of the regulator, making the reduction from 825 to 380 lbs. The charts from these thermometers give a clear picture of conditions, especially the one which records the reduced temperature. This chart shows a gas temperature variation of only four degrees, even though there has been an atmospheric temperature change of 25 degrees. This would not be possible without insulation, and it is highly likely that a much higher gas temperature would have to be maintained if freezing were to be prevented. This, of course, would mean less recovery of condensables and they are objectionable in a pipe line.

The method herein described may not be a cure-all, but it will prove the advantages of controlled heat as applied to pressure reduction from distillate wells, and so when designing your regulator stations try overcoats.

■ ■

W. J. Cruikshank Dies

W. J. Cruikshank, general storekeeper for Puget Sound Power and Light Co., Seattle, Wash., died suddenly August 19. He had been with Puget Power for 20 years.

P.C.G.A.'s 46th Convention

IT was exciting; it was educational; it was entertaining; it was convivial—IT was the Pacific Coast Gas Association's 46th Annual Convention held at the Fairmont Hotel atop San Francisco's Knob Hill from September 6 to 8 inclusive with Saturday, September 9—Gas Industry Day at the Golden Gate International Exposition—a grand finale. And it was popular; 560 delegates registered to make the 1939 Convention the third largest in Association history, according to the official figures of Managing Director Clifford Johnstone.

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With "Gas on Parade" as its theme, the Convention opened under the guidance of diminutive, booming-voiced Harry L. Farrar, president of the Association, who introduced P. M. Downing, Pacific Gas and Electric Co. vice president and general manager, who welcomed the delegates to San Francisco as "sane Americans" whose work is for peace and man's welfare.

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Said President Farrar (among other things): *"It strikes me that probably our biggest job in management today is to learn the most effective method or manner of selecting new employes and training them properly after they are on the payroll. We should also pay more attention to fitting the man to the right job. . . . It is my opinion that through this Association a committee could be of considerable service were it charged with the duty of serious study of the subject over the next several years."*

• • •

The Canadian Gas Association, through E. W. Bowness, vice president, Canadian Western Natural Gas, Light, Heat and Power Co., invited the P.C.G.A. to join in its Annual Convention at Jasper National Park, B. C., July 3-5, 1940. The invitation was accepted, and the meeting will take the place of the Northwest Conference.

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Who's who for 1940: President, A. E. Holloway, vice president in charge of sales, San Diego Consolidated Gas and Electric Co.; Vice President, R. A. Hornby, vice president, Pacific Lighting Co.; Treasurer, D. G. Martin, general auditor, Pacific Gas and Electric Co.

New Directors: F. M. Banks, Southern California Gas Co.; R. S. Fuller, Pacific Gas and Electric Co.; M. A. Pooler, Tucson Gas, Electric Light & Power Co.; Clyde H. Potter, Southern Counties Gas Co.

Manufacturers' Section: General Chairman, R. G. Logue, Ward Heater Co.; General Vice Chairman, W. R. Smith, Continental Water Heater Co.

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Of Asher Earl "Doc" Holloway: Born, Colfax, Indiana. . . . Graduate of Purdue '09 (Electrical Engineering, Captain football team, '08) . . . with San Diego Consolidated since 1910 . . . Member P.C.G.A. for 23 years . . . San Diego Civic leader (past president Chamber of Commerce; organized the San Diego County Development Federation; represents San Diego County on the Southern California Economic Council) . . . Hobbies: candid camera, woodworking, trout fishing.

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Announced President-elect Holloway: Coronado has been selected as the place for the 1940 convention.

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Visitors from afar: E. S. Jones, a 33-year member, who comes over each year from Honolulu (Pauline Edwards came with him); R. S. Agee, A. G. A. E. M., New York; George Wherle and Jas. P. Dresen from Public Service Co. of Colorado; F. L. Fairchild, Sprague Meter president, from Bridgeport, Conn., stopped over for a day or so before going to Hawaii on vacation. W. M. Deaton from the U. S. Bureau of Mines and W. H. Howe, Tucson Gas, Electric Light & Power Co.; E. Holley Poe, A.G.A. Natural Gas Section Secretary, New York, and L. C. Olpin of Mountain Fuel Supply, Salt Lake City; Norton McLean, American Meter Co., New York, and E. C. Sorby of Geo. D. Roper Corp., Rockford, Ill.; W. C. Mainwaring, B. C. Electric Railway, Ltd., Vancouver, B C., and last but not least Jessie McQueen of A.G.A., N. Y.

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R. G. Logue who was commended by the Awards Committee for his able leadership of the Manufacturers' Section conducted a lively meeting on Wednesday afternoon. Said Fred E. Yerger of the Bank of America before this meeting: *"The most important item in installment selling is the proper collection follow-up . . . a collection system further supported by 'sales' collectors . . . a financing agency can make or break a dealer for whom it is handling collections . . . it must be prepared and able to make 'second sales' even to the third or fourth time."*

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Highest honor came to Past-President James F. Pollard, president of the Seattle Gas Co., when he became the Association's fourth member to receive the Addison B. Day Medal of Honor, awarded only for outstanding and distinguished individual service to the gas industry beyond the strict line of duty.

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"16,000,000 Headaches," a series of discussions on ways of dealing with people conducted by F. M. Banks of Southern California Gas Co., turned the Thursday morning General Session into one of the spiciest on the program.

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A surprise event on the first General Sessions program was the presentation to Charles Remschel, power engineer of the Southern Counties Gas Co., of an award by the Gas Engine Power Committee, Industrial Gas Section, A.G.A., for his contributions to the new *Gas Engine Handbook.*

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Busiest man at the convention—Fred F. Doyle, Convention Committee chairman, who turned in a swell job of seeing that everybody was happy all the time. Next busiest man, A. J. Noia, who led the crew of pretty P. G. and E. girls manning the registration desk.

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There were 116 wives of delegates registered and Mrs. H. L. Farrar, the Convention Hostess, saw to it that most of them had a very busy three days what with a reception and tea on Wednesday, a luncheon at the Yerba Bueana Club on Thursday, a Luncheon and Bridge on Friday, and the Golden Gate International Exposition on every day. And there were always husband hunting expeditions for odd moments.

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The Basford Trophy was awarded to the Technical Section, under the able leadership of Chairman H. G. Laub, Southern California Gas Co., capably assisted by Committee Chairman C. P. de Jonge, A. R. Bailey, S. S. Donaldson, and M. A. Richford.

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"Why Meter and How!" a clever skit written by Zita O'Connor and presented by Miss O'Connor and Eleanor

The Camera Runs Wild

REFRESHMENTS between sessions: J. J. Delaney, general sales manager, Reliance Regulator Corp.; E. S. Jones, superintendent, Honolulu Gas Co.; Capt. A. E. Higgins, vice president, Pittsburgh Equitable Meter Co.; Elting Henderson, superintendent, Southern California Gas Co., Los Angeles, Calif.

CONVENTION Committee Chairman F. F. Doyle, Pacific Gas and Electric Co.; A. E. Holloway, San Diego Consolidated Gas and Electric Co.; N. R. McKee, the Southern Counties Gas Co.

BELOW: Norton McKean, vice president of the American Meter Co.

ABOVE: C. A. Miller, vice president, Servel, Inc., of San Francisco.

AT LEFT: E. H. Roseberry, vice president, Sprague Meter Co., chats with Chris Goldkamp, San Diego Consolidated Gas & Electric Co. CENTER: In a huddle, W. F. Henderson, Detroit City Gas Co.; H. Boezinger, district manager, and Walter Davis, vice president, Pittsburgh Equitable Meter Co. AT RIGHT: H. E. Keebler, northwestern representative, American Stove Co.; Pauline Edwards, Honolulu Gas Co., and Hal Singleton, sales manager, Grayson Heat Control.

BELOW: H. W. Edmund, new business manager, Coast Counties Gas and Electric Co.; Gladys Price, home service supervisor, Southern California Gas Co.; L. F. Galbraith, division sales manager, Pacific Gas and Electric Co.; Katherine Rathbone, home service director, Southern Counties Gas Co.; Van E. Britton, division superintendent of the Pacific Gas and Electric Co.

BELOW: Hard at work producing "The Daily Burp," the convention's bull tossing news organ, A. C. Joy, advertising manager, Pacific Gas and Electric Co.

ABOVE: Harold Howard, Howard Supply Co.; H. P. George, superintendent, and H. L. Masser, executive vice president, Southern California Gas Co.; D. H. Perkins, superintendent gas department, San Diego Consolidated Gas and Electric.

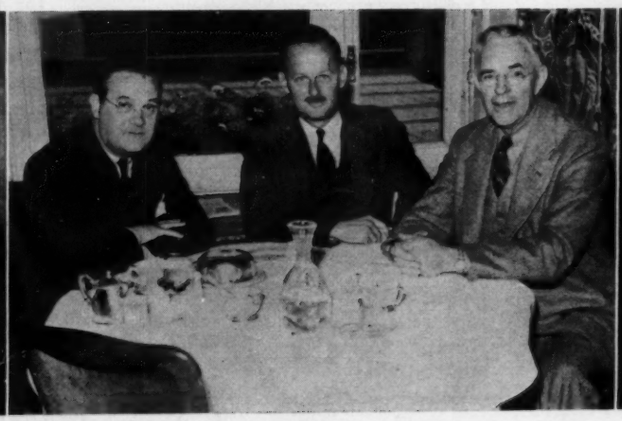
Among Those Present

THE HARD working registration staff (the women, left to right): Dorothy Raftenberg, B. Johnson, Leona Robinson, Alma Meyer, Mrs. Lois Clark Galbraith, Zita O'Connor. (The men, ditto): V. Robinson; A. J. Noia, registration chairman; Ed Wood, and W. W. Clark, all of Pacific Gas and Electric Co.

ABOVE: Engineer R. S. Fuller, of the Pacific Gas and Electric Co.

BELOW: P.C.G.A. Vice President - Elect R. A. Hornby, vice president, Pacific Lighting Corp.

P. C. G. A. executive triumvirate, President Elect A. E. Holloway, Managing Director Clifford Johnstone and President H. L. Farrar



AT LEFT: B. M. Laulhere, engineer, and Grove Lawrence, superintendent, Southern California Gas Co., confer with Harry J. Smith, engineer, Pacific Gas and Electric Co. CENTER (at breakfast): F. L. Fairchild, president, Sprague Meter Co.; F. A. Hough, engineer, Southern Counties Gas Co.; H. R. Basford, president, H. R. Basford Co. AT RIGHT: H. M. Thomas, president and general manager, Northwest Cities Gas Co., and E. J. Hinchey, sales manager, James Graham Mfg. Co.

THREE ENGINEERS (below): Frank Wills, Pacific Gas and Electric Co., talks matters over with J. L. Obeseider and Guy Corfield of Southern California Gas Co.

MRS. LOIS CLARK GALBRAITH (below) tunes up th modern gas-operated radio in the Fairmont Hot lobby, which kept conventioneers in touch with th outside world during the convention day. The fir gas-powered radio, built by Ray Edwards of Sa Diego Consolidated in 1928, was also on display : the lobby of the Fairmont, convention headquarter

ARMCHAIR conference—E. Holley Poe, secretary, Natural Association, is seen in relaxed conversation with Carl A. Swigart, trade relations representative for the P. C. G. A.

Gemmell, both of P. G. and E., drew laughter and applause at the Thursday morning General Session.

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Men most likely to be found in deep and abstract discussion: R. S. Fuller, F. A. Hough, Frank Wills, Guy Corfield, C. B. Babcock, Nicolai Senatoro, H. L. Masser, R. L. Snyder.

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The Sales and Advertising Section, under Chairman H. W. Edmund, put forth a worthy effort on Friday afternoon. The speakers in a symposium, "Getting Fun Out of Selling," conducted by N. O. Fratt of the Seattle Gas Co., were W. H. Howe, Tucson Gas, Electric Light and Power Co.; L. F. Galbraith, Pacific Gas and Electric Co.; W. C. Mainwaring, British Columbia Electric Railway Co., Ltd.; A. F. Rice, Southern California Gas Co.; Louis Wallenberger, Coast Counties Gas and Electric Co.; and Katherine L. Rathbone, So. Counties Gas Co.

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Gold Medal Award: To B. M. Laulhere and C. F. Briscoe of the Southern California Gas Co., for their paper, "Partial Dehydration of High Pressure Natural Gas." Clyde Potter was the Awards Committee chairman.

Those selected for honorable mention for papers delivered before the Convention were:

Educational Committee — W. R. Davis, Southern California Gas Co., "The Right Man in the Right Place."

Sales and Advertising Section—R. V. Davis, Southern California Gas Co., "Knowing Your Business."

Technical Section — Committee on Architects and Builders Service, Frank L. Moon, chairman, for preparation of "Data Book on Gas Utilization."

A. F. Bridge and F. A. Hough, Southern Counties Gas Co., "The Southern Counties Gas Co.'s Butane-Air Standby Plant."

W. C. Mosteller, Southern Counties Gas Co., "The Application of the Theory of Probability to the Determination of Domestic Peak-Hour Loads."

Morris A. Richford, Pacific Gas and Electric Co., "A Deflecting Type Orifice Cap for Gas Ranges."

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What were the women doing? On Wednesday afternoon they held their Committee meeting under Chairman Zita O'Connor, and a whole galaxy of subjects anent the women's role in the gas industry was bandied about by Prudence Hury (Southern Counties); Freda Raban (Seattle Gas Co.); Edith Hammond (San Joaquin Power); Rea Mae Prendergast (Coast Counties); Bena M. Chaney (San Diego Consolidated); Madeleine Bast (Pacific Gas and Electric); Leona Robinson (Pacific Gas and Electric); and Nelle Kinney (Southern Counties).

The Home Service Luncheon, Katherine L. Rathbone, chairman, was held Friday noon, and featured as speakers Gladys Price, Jessie McQueen, Pauline Edwards, and Cleo Felsinger.

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G. M. Thomas, Pacific Gas and Electric Co., led his Accounting Section in two sessions—on Wednesday and Friday afternoons.

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Of more than passing interest was the Commercial and Industrial Sales Committee meeting under Louis Wollenberger. "Film Processing" was the topic of H. M. O'Haver. W. L. Badger covered "High Heat Transfer Systems." E. H. Adler offered first hand information on "Gas and the Aircraft Industry." Ray Trowbridge of Seattle outlined conditions in the Northwest. A. F. Michael described a "Continuous Vitreous Enameling Oven."

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The annual employes' contest subject was, "Do you know your certified performance gas range?" It was sponsored by the educational committee, under the chairmanship of Harrison Musgrave, Southern California Gas Co. Merit prize winners were:

First Prize ($50), Charles W. Fletcher, Southern California Gas Co.

Second Prize ($30), Ray Robinson, Coast Counties Gas & Electric Co.

Third Prize ($20), J. A. Andrews, Pacific Gas and Electric Co.

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Golf, always popular, with fine weather, an excellent course at the California Country Club, and 54 spirited competitors, came to the highest expectations of Chairman Ed. J. Hinchey. The winners:

Low Net (The Basford-Babcock-Pedersen Trophy)—J. P. Schaefer, Coast Counties.

Low Gross—Geo. H. Finley, Pacific Coast Publishing Co.

Convention Chairman's "H - G" Prize: (High Gross or Honest Golfer?) H. W. Edmund, Coast Counties.

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Coast Counties Gas & Electric Co. for the second time won the Annual Skeet Shoot for the perpetual trophy presented by H. R. Basford. High Gun, C. L. Kirksey, Coast Counties; Second High Gun, S. S. Donaldson, Southern California Gas Co.

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The Women's Committee awarded first prize in its Year Book contest to the Pacific Gas and Electric Co., Eleanor Gemmell, chairman, and second prize went to Southern Counties Gas Co., Prudence Hury, chairman. Honorable mention was given Seattle Gas Co., Freda Raban, chairman.

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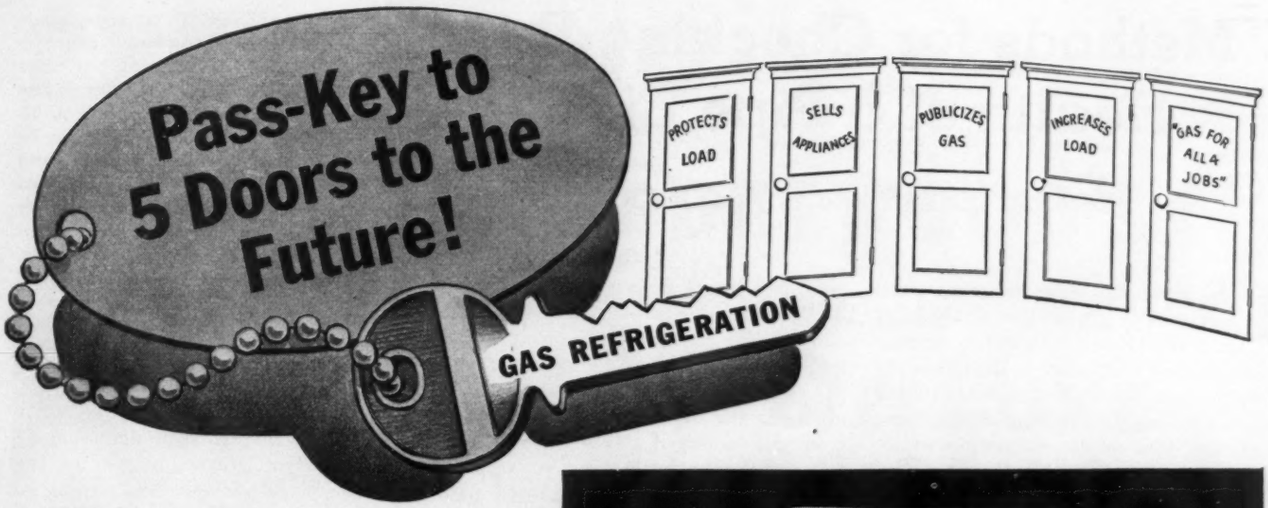
The Convention was officially closed on Saturday, September 9—Gas Industry Day at the Golden Gate International Exposition—by Charles Babcock of the General Gas Light Co., who presided over a luncheon at the Gas Industries Exhibit.

AT LEFT: George Eggleston, general manager, H. R. Basford Co.; C. B. Babcock, president, C. B. Babcock Co.; Leigh Whitelaw, Jones and Laughlin Steel Co. NEXT: H. R. Mead, district manager, Southern Counties Gas Co., congratulates C. Remschel, engineer, Southern Counties Gas Co., on the certificate awarded him by the A. G. A. for his original work with gas engines. AND NEXT: Two Technical Section chairmen (incoming), H. J. Smith, P. G. and E., and (retiring), H. G. Laub, So. Calif. Gas. AT RIGHT: E. C. Sorby, sales promotion manager, George D. Roper Corp.; R. G. Logue, vice president, Ward Heater Co., and R. S. Agee, sales promotion mgr., A.G.A.E.M.



WHAT'S the best way today for a utility to protect its present gas load . . . stimulate the sale of gas appliances . . . increase load without extra investment . . . publicize the modernity of gas . . . promote the use of "Gas for All 4 Jobs"?

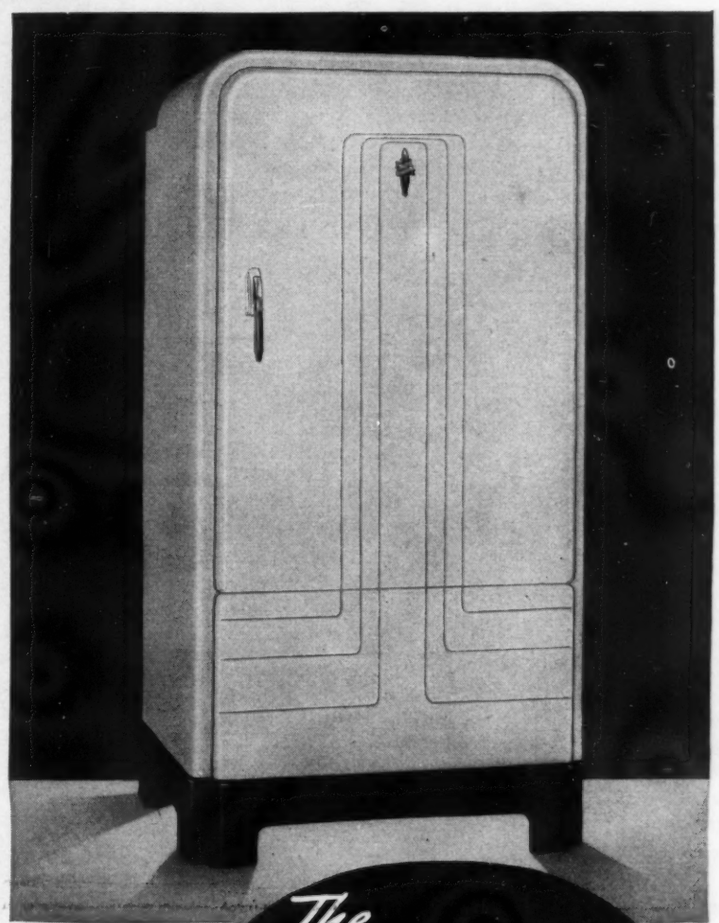
Executives in the gas industry are focusing their attention on the interesting way in which gas refrigeration gives them a pass-key to these five doors of opportunity.

The accomplishment of each of these will not only bring any utility immediate profit . . . but each in itself represents an opportunity to build for the future.

For in selling gas refrigeration to a family now only cooking by gas, the home is less likely to turn to any other fuel; thus load is protected . . . the refrigerator adds new load . . . the woman in the kitchen thinks of gas as the modern fuel . . . wants other appliances.

Beyond these facts is the important point that this year alone, it is estimated, more than a million families will replace their present worn-out automatic refrigerators.

Once lost, this opportunity for replacement sales may not recur again for years; but by pushing gas refrigeration today, you'll not only win many new customers, but get old ones to add new gas services.



Gas Refrigeration:

- **PROTECTS YOUR PRESENT GAS LOAD**
- **INCREASES LOAD WITHOUT EXTRA INVESTMENT**
- **STIMULATES THE SALE OF OTHER GAS APPLIANCES**
- **PUBLICIZES THE MODERNITY OF GAS SERVICE**
- **PROMOTES THE USE OF "GAS FOR ALL 4 JOBS"**

The **SERVEL** **ELECTROLUX** *Gas Refrigerator*

WINS GOOD WILL FOR GAS SERVICE

Methods for Checking the Health of a Pipe Line

By K. H. LOGAN and E. A. KOENIG*

• **THE DATA PRESENTED on these pages are taken from a more extensive paper by Dr. Logan and Mr. Koenig published in the "Journal" of The American Water Works Association for September, 1939 (Vol. 31, p. 1451). Still further information can be gained by reference to the articles listed at the end of this abstract. The technique of appraisal of a pipe line's condition by inspection at intervals along its length is steadily improving, and in its present development is reasonably dependable and valuable if intelligently applied by engineers who have given the matter careful thought.—Editor.**

IT IS often necessary to estimate the condition of a pipe line or network in order to decide whether protection against corrosion is desirable, to determine whether and at what points reconditioning is needed, or as a preliminary step in the estimation of its present or future usefulness or value. Under some conditions records of leaks and reconditioning operations may furnish adequate information. Frequently, however, such records are absent or inadequate and it becomes necessary to examine parts of the line, and from results of these examinations to estimate the condition of the line as a whole or of sections thereof.

Before undertaking the inspection of a line the inspector should decide what observations are necessary for his ultimate objective, since several kinds of observations might be made, not all of which would be equally informative. The character of the observations should depend somewhat on the use that is made of the data and the service expected of the line. Thus the loss of metal by a section of pipe might be of primary importance. This can be estimated under favorable conditions from determinations of the change in the electrical resistance of sections of the line. If the line is to be reconditioned by spot welding, the number of pits to be welded is the information most needed. Under other conditions the depths of the deepest pits may be of greater interest. It is not possible, therefore, to state an objective which should govern all inspections.

When an engineer decides to inspect a pipe line at certain points for the purpose of determining the condition of the line as a whole, certain questions require his consideration regardless of the character of the observations he proposes to make. Some of these are so interrelated that one cannot be fully discussed until some of the related points are at least partly understood. On this account it will be necessary to defer the completion of the discussion of some of the topics until other topics have been presented.

1. *The amount of pipe to be uncovered at a single inspection point.* Underground corrosion, which usually controls the condition of pipe lines, is so varied that if a small area of the pipe's surface is examined it is probable that the data obtained will differ from the results of another similar examination. The estimation of the true condition of the line, therefore, requires a large number of such examinations. If larger areas are chosen for the unit of inspection, the data will probably have a narrower range. If the deepest pit on the unit area is the datum observed, it will be found that the average of the deepest pits on a number of small areas will be less than the corresponding average for larger areas. This is illustrated by the lower curve in Fig. 1, in which the linear feet of pipe inspected are indicated at the bottom of the figure. This curve is based on data from a 9-year-old 12-in. steel line exposed to a heavy clay soil, and it was plotted on the assumption that an inspector started at 48 points along the line and uncovered 1 ft. of pipe on which the deepest pit was measured. The trench was then extended 1 ft., and the deepest pit on each 2-ft. length determined. Similarly, the deepest pits corresponding to greater lengths up to 20 ft. were measured. It will be noticed that as the unit for inspection increased the average of the deepest pits increased. It might be thought that by choosing some greater length for the unit for inspection an area might be found such that the choice of a still larger area would not result in larger values when the maximum pit depths are averaged. The upper curve in Fig. 1 which is based on the inspection of 16 miles of 11-year-old 8-in. steel pipe exposed to a sandy loam soil, shows that this is not the case. Similar studies on a number of pipe lines under a wide range of soil conditions show no exception to this relation. The relation between the average of the depths of the maximum pits and the area from which it was chosen has been expressed mathematically by several investigators, but for the present discussion it is sufficient to say that the average observed maximum pit depth will depend to some extent on the area of the pipe from which the deepest pit is chosen, and therefore this area must be noted if the data are to be correctly interpreted. It can be shown that the data show less dispersion as the unit area inspected is increased, and that the average of the maximum pit depths

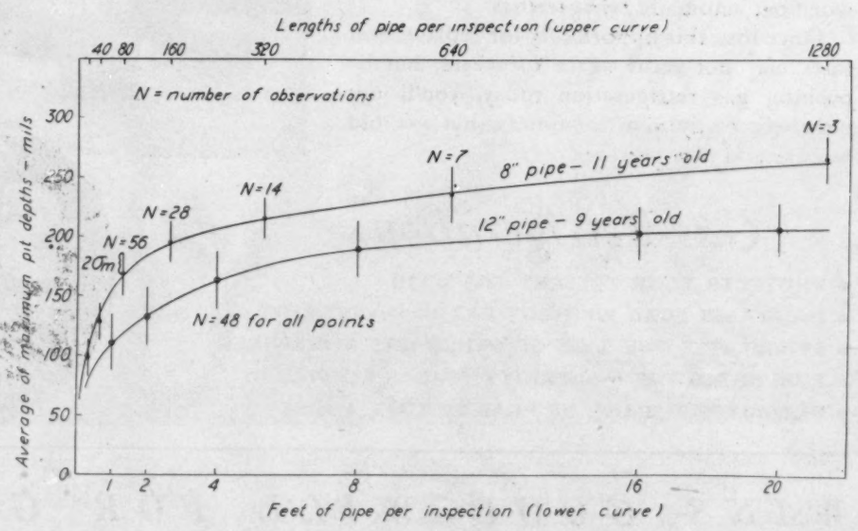


FIG. 1. Relation of maximum pit depth to area inspected.

*Dr. Logan is affiliated with the National Bureau of Standards, Mr. Koenig with the Magnolia Pipe Line Co.

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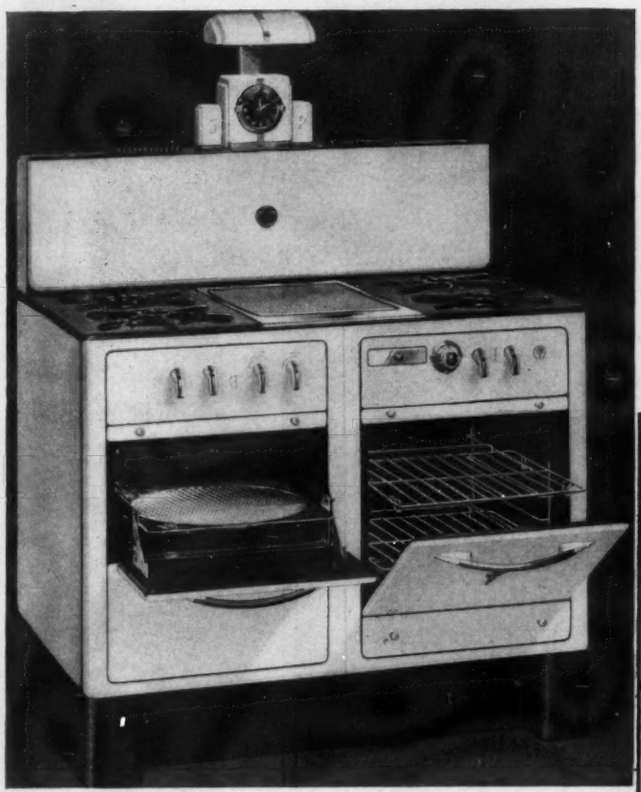

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to be expected on an area of moderate size can be estimated from the average of the maximum pit depths on a somewhat smaller area. It follows that, within limits, the inspector may select an area for his unit of inspection which local conditions dictate if he measures the maximum pit depths on at least two adjacent known areas.

2. *Number, spacing, and location of inspection points.* The fundamental principle in inspecting pipe lines at a few points in order to estimate the condition of the entire line is that the data so obtained shall be representative of the various conditions along the line. The rules for sampling materials are generally applicable.

Random Inspections

Occasionally an attempt is made to determine the condition of a pipe line or system by examining the pipe at points where it happens to be exposed for connections, repairs or other purposes. These inspections may be supplemented by others at points where conditions appear to be different. A sufficiently large number of such inspections might yield representative data, but probably many more would be required than for inspections chosen more systematically.

Gill[1] maintains that adequate data can be obtained only by inspecting a line at equally spaced intervals. The data obtained by this commonly used method may be treated by statistical methods which will indicate the adequacy of the data.

A comparison of the results for different numbers of inspections, different spacing of inspection points, and for different starting points, is illustrated by Fig. 2.

Each of the first eight columns in Fig. 2 represents the average of measurements of the depth of the deepest pit on each of 25 joints of 8-in. pipe (20 ft. long). The inspections were made at 1-mile intervals. The different columns represent the data for eight starting points separated by one-eighth mile intervals. The next four columns show the results of four sets of 50 inspections of the same line, the inspections being one-half mile apart. The last two columns show the results of inspecting the line at one-fourth-mile intervals, using two starting points. Although there are slight apparent differences in the averages resulting from different starting points, no two averages differ by more than the sums of their standard errors. The probability of there being a real difference in the averages is therefore small.

The horizontal line crossing the figure indicates the average of the depth of the deepest pit on each of 6403 lengths of 20-ft. pipe. It will be seen that in all cases the estimated averages of the deepest pits differed from the true average by less than twice their standard errors. This is, of course, what might have been predicted from a knowledge of statistical methods, and shows in another way that the starting point had no real effect on the average.

Denison[2, 3] and Ewing[4, 5] have shown that the corrosion of pipe lines as measured by leaks and replacements can be related to the types of soil which the lines traverse. Since the corrosion of a pipe appears to be characteristic of the type of soil to which the pipe is exposed, and since a large percentage of a pipe line may be exposed to the same soil type, it seems probable that under favorable circumstances the process of estimating the condition of a long pipe line might be shortened by first determining the amount of line in each kind of soil traversed and then determining the average condition of the line exposed to each of the several kinds of soil. This procedure would also have the advantage of locating the sections of line which differed in corrosiveness, an advantage of considerable importance if the line is to be protected or reconditioned.

Having inspected a pipe line at a considerable number of places, the inspector faces the problem of presenting the data most effectively. One of the first steps might be the computation of the average of the observed pit depths or other observations, their standard deviation, and the standard error of the average. This will give some information as to the dispersion and dependability of the data and form a basis for deciding whether more data are needed. Because of the wide dispersion of most corrosion data, an average alone conveys little information on the condition of various parts of the line which may differ greatly.

Locating Corrosions

If the pipe line is to be reconditioned, the location of the seriously corroded sections is needed. If the inspection interval is not too great, these sections may be located roughly by plotting on profile paper the pit depths or other observations against the identification numbers of the inspection points. The extent of badly corroded areas is rendered much more certain if the inspections have been made on the basis of soil types, although there may be a wide range in maximum pit depths on different sections of pipe in a single type of soil.

It has already been shown that the average of the deepest pits on a number of equal areas increases as the areas increase. If a sufficient number of pits are measured on at least two areas at each point of inspection it is possible to employ equations developed by Scott,[6] Ewing,[7] and Rhodes[8] in the prediction of the pit depths on

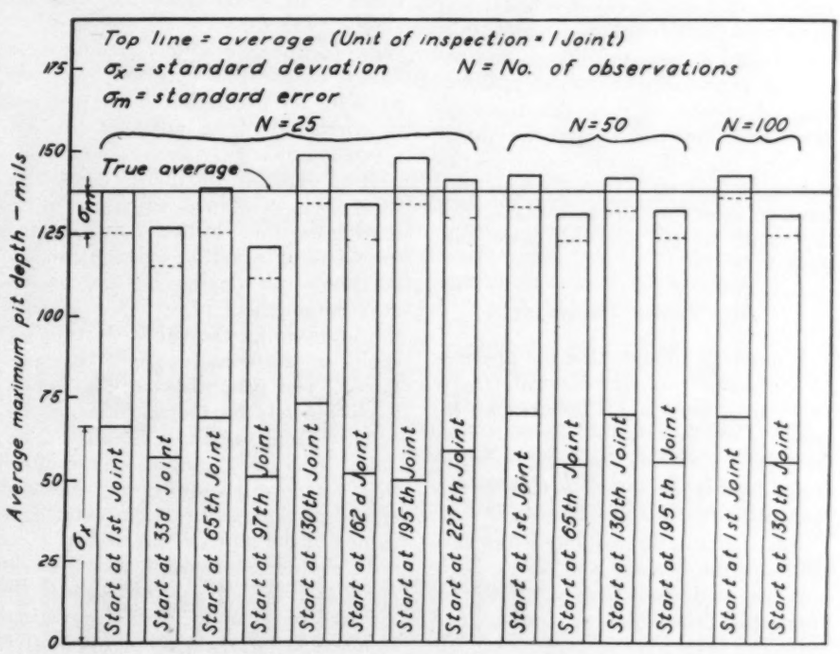

FIG. 2. Comparison of maximum pit depths for different starting points of equally spaced observations. Inspection intervals ¼, ½, and 1 mile.

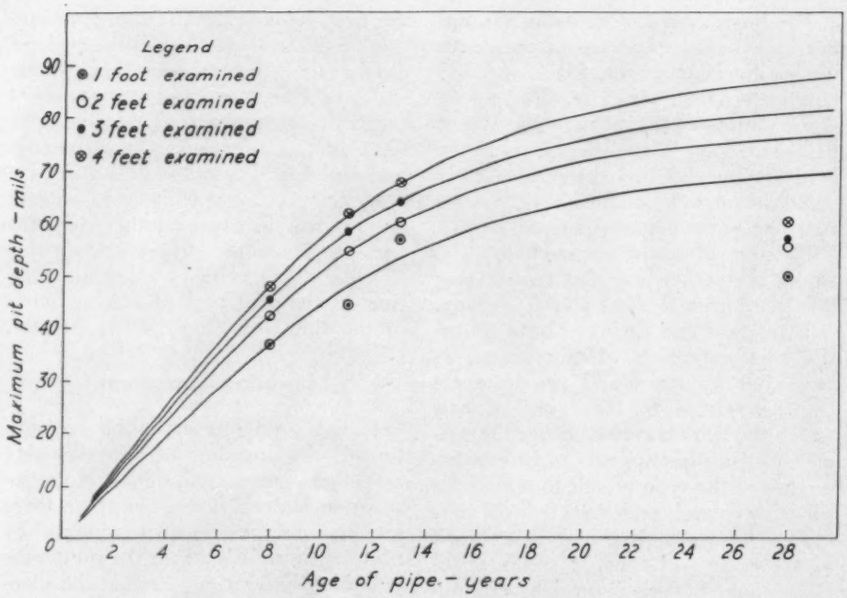

FIG. 3. Pit depths on parallel lines differing in age.

larger sections of pipe than those actually examined. All of the equations are empirical and although they are based on a large number of observations, their accuracy and applicability to other pipe lines have not been fully established. They are at least very suggestive of what might be found by more extensive inspections.

A considerable amount of information concerning corrosion phenomena has been collected and is worthy of consideration as a supplement to the judgment and experience of the expert on pipe line conditions. Several investigators have developed empirical equations for the relation which they have found between pit depths and period of exposure on pipes of different ages. A number of these equations are given in one of the papers[9] previously referred to. All of the equations involve the use of a factor which purports to show how the loss of metal or the depth of the pits increases with time.

Age Factor Deceiving

It might be thought that the progress of corrosion could be determined by examining lines of different ages exposed to the same soil. That there may be a fallacy in this reasoning is illustrated by Fig. 3 plotted from data furnished by the Gulf Oil Corp.

Fig. 3 shows the results of measurements of the deepest pits on 1-, 2-, 3- and 4-ft. sections of four parallel interconnected 8-in. lines at 1-mile intervals. The lines were 52 miles long, uncoated, and on the average, laid at nearly the same depths. The data for the three newer lines are consistent and indicate a decrease in the rate of corrosion as the lines become older, but the average pit depths on the sections of the 28-year-old line were less than those on corresponding sections of the 13-year-old line. Sufficient data are not available to justify a positive statement as to why the oldest line shows the lowest rate of corrosion. There is, however, some evidence[11] that when a new pipe is laid parallel and connected to an older one the new one corrodes at a more rapid rate because of a difference of potential between them which makes the new line anodic. The data for the 13- and 28-year-old lines show that the corrosion record of one line may not be a safe basis for the prediction of the progress of corrosion of an adjacent line exposed to apparently similar conditions.

If an equation for the pit depth-area relation is combined with one representing the effect of time on pit depths, the resulting equation will indicate the maximum pit depths on any chosen area or length of pipe at any selected time, providing the values of the constants in the equations can be determined. The reliability of the indications depends on the accuracy of the equation and the dependability of the data. It is very desirable, therefore, that whenever possible the standard errors of the results be calculated as in one of the papers[7] referred to.

It should be remembered that the equations only purport to show the average of a number of observations sufficiently large to be representative. No equation should be expected to predict the pit depth or other corrosion phenomenon at any single point and the fact that the use of an equation results in an estimated value far different from a single observed value is not a strong indication that the equation is incorrect.

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■ ■

West Virginia Association Holds Annual Meeting

The annual convention of the West Virginia Oil and Natural Gas Association was held September 27 and 28 at the Kanawha Hotel, Charleston, W. Va. President Harry A. Wallace, Jr., United Fuel Gas Co., of Charleston, was in charge of all general meetings.

A paper on "Oil and Gas Production Practices and Methods in the Mid-Continent and Gulf Coast Fields" was read by D. R. Knowlton, general superintendent of production for Phillips Petroleum Co., Bartlesville, Okla. In addition to that and other discussions, a field trip was planned for delegates, which included a demonstration of tubing high pressure, large volume gas wells under pressure without the loss of gas, sponsored by the Otis Eastern Co., Bradford, Pa. According to a report by E. A. Munyan, United Fuel Gas Co., this year's convention was most successful.

■ ■

Pontiac, Ill., Gets Natural Gas From Public Service Co.

Natural gas service was inaugurated in Pontiac, Ill., on August 15 when gas arrived in the recently completed 23-mile pipe line of the Public Service Co. of Northern Illinois, according to O. E. Sinclair, district manager of the company.

A crew of 82 experienced gas men were on the ground to handle the work of converting gas facilities.

■ ■

Northwood, Iowa, Votes Gas

Northwood, Iowa, has recently voted a 25-year natural gas franchise to the Peoples Gas and Electric Co. of Mason City, Iowa. Construction of a distribution system and a lateral line from Kensett will begin immediately, it has been announced by Charles E. Strickland, president and general manager.

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The Y78 Time-O-Stat Package (illustrated above) provides lowered night temperature and a true economy gas control set. It consists of a silent solenoid gas valve, transformer, T801A Time-O-Stat and all necessary fittings. This set permits night temperature to be controlled at any point between 45° and 55° F. with automatic return to day temperature at any time selected within eleven hours.

The Y121 Package (illustrated below) uses the famous Series 10 Circuit and includes the universally accepted Heat accelerated Acratherm, the silent solenoid gas valve and all fittings. It permits manual opening and automatic recycling of gas valves. This set does not provide lowered night temperature.

The Y26 package (not illustrated) does offer this added feature. It differs from the Y121 package by including the Da-Nite Acratherm in place of the Acratherm. Minneapolis-Honeywell Regulator Company, 2946 Fourth Avenue South, Minneapolis, Minnesota.

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SALES Slants

The Proof of the Pudding Is in the Demonstration

• **THIS SERIES** of articles dealing with sales fundamentals, which began in the Sales Slants department of the June, 1939, issue with a chapter entitled "Getting Yourself in the Proper Frame of Mind," is continued this month with Chapter 5, "The Proof of the Pudding Is In the Demonstration." These articles are not intended as a course of study nor do they aim to teach a new system of selling, but rather it is their purpose to present in a direct and unacademic manner a few of the fundamental principles on which the art of selling is based.—Editor.

DO I need it? Have I the money? Should I buy now?

These three questions, we stated in our last chapter, must be answered affirmatively before anyone can arrive at a decision to buy. Sometimes the answers are automatic, as in the case of a man who reaches into his pocket for a cigarette, finds he has none, makes sure he has the price of a fresh package, and turns immediately into the corner cigar store to buy one. But most of the time, particularly in the purchase of such merchandise as gas appliances, the prospective buyer has difficulty in making up his mind.

In addition to the three primary questions listed above, a hundred other queries demand an answer. Will this range meet my requirements? Is it sturdy? Couldn't I do better at another store? Should I have six burners or can I get along with four? Won't the porcelain enamel chip? And so forth.

Here is where the selling process comes in. For it is the function of the salesman, through his specialized knowledge of the merchandise he is selling, to supply the necessary information on which the buyer can base intelligent answers to the multiple questons that arise. And naturally, if the salesman wants to count himself a success in his chosen profession, the majority of those answers should be in the affirmative. So the problem of selling seems to reduce itself to a matter of getting the prospect to say yes.

Now upon what is the anwser "yes" predicated? It is predicated upon mutual agreement. I state, "All men are mortal." Your experience confirms that proposition, so you answer, "Yes." We are in agreement. I state, "I am a man." Your observation confirms that proposition, so again you answer, "Yes." Again we are in agreement. I conclude, "Therefore I am mortal." Thus by mutual agreement on a set of propositions, we have arrived at a logical conclusion that cannot be disputed.

But suppose you said, "How do you know all men are mortal?" Or suppose you said, "How do I know you are a man?" What must I do in order to reach the desired conclusion? I must prove my proposition. If I were a Joe Louis, I might knock your block off, which would be one way of proving my manliness. Or, if I were a salesman, I might find other means of demonstrating my masculinity. Basically, in either case, the only way I can convince you and bring you to a yes answer is by what? Demonstration.

The art of salesmanship is the art of convincing demonstration.

It sounds very simple, doesn't it? And it would be if all buyers had the same needs, the same desires, the same point of view. We could set up a formula which would cover all cases. That unfortunately is something we cannot do. For, as we pointed out in a previous chapter, every customer is a new customer, and only by understanding his special needs, desires, and point of view can a salesman hope to effect the convincing demonstration that results in sales. This requires study, intelligence and experience.

The tyro, ordinarily, seeks to perfect a sales demonstration that he may use on every prospect. Not too sure of himself, uncertain of his knowledge of his merchandise, he takes refuge in the "canned" sales talk. A prospect comes in to look at a range. He leads her to a model on the floor and proceeds to tear it to pieces, prattling on about this feature and that feature. He does not take time to find out what kind of range the prospect is interested in; how many are in her family; what her special requirements are. He puts her through the sales mill; if she buys, his method is vindicated; if she does not buy, she was no prospect.

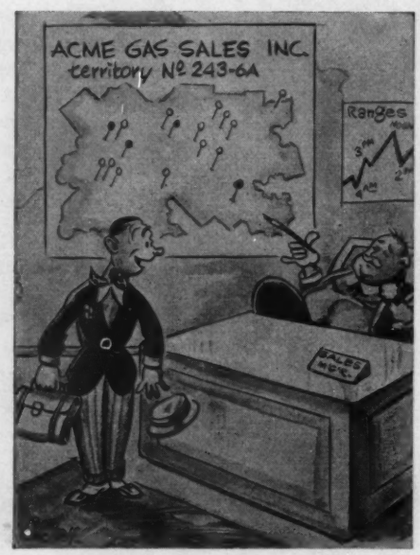
But, you may well ask, isn't it possible to plan a demonstration that would be effective? The answer is, yes. But with this reservation: the plan should be elastic enough to adjust itself smoothly to each individual prospect. In our last chapter we said that an understanding of the three decisions the buyer has to make before he buys anything is important because it affords a basis upon which the salesman may plan his sales talk. Let us see how this operates.

You are on the sales floor. Mrs. Prospect enters. You have never seen her before, know nothing whatever about her. Her general appearance is that of a person of moderate means. She is neatly but inexpensively

AND WHO'S NEXT?

For accepted and published captions to the "Dotted Line Roscoe" Cartoon, published below, G A S will pay $5.00. Address G A S, 810 South Spring St., Los Angeles, Calif. This month's winner is **Ashley P. Barnes**, of Casper, Wyoming. A check for $5.00 is on its way.

Dotted Line Roscoe



Did you tell her to try singeing a chicken on an electric range?

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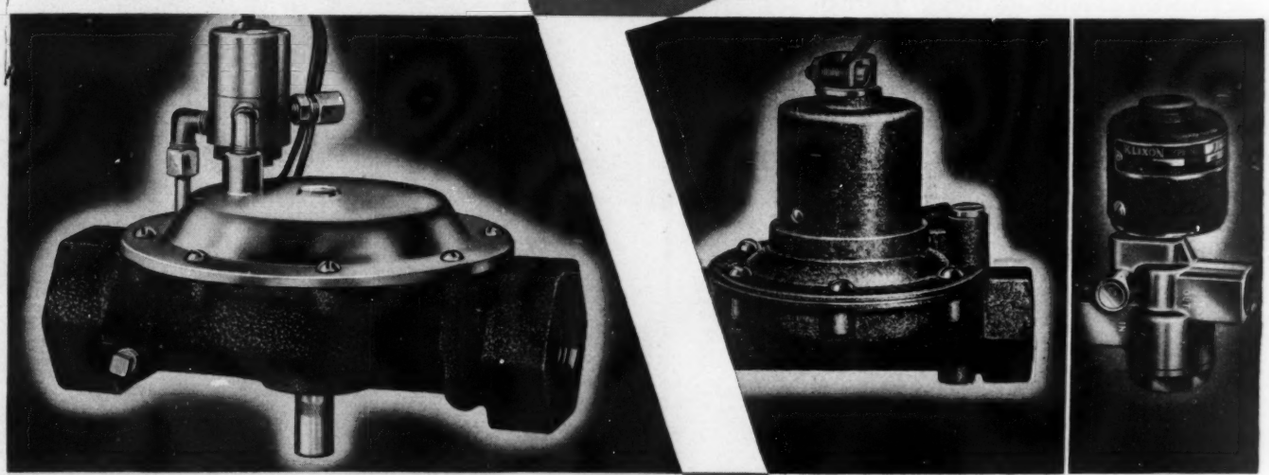

You can get Klixon Electrically-Operated control valves for practically any size or type of gas heater. With the addition of the new large unit these valves are available in sizes ranging from ⅜″ to 1¼″ I. P. S. through 1000 cu. ft. capacity.

Being thermally operated—by a snap-acting thermostatic disc—these positive-acting valves give you none of the troubles that you get with solenoid valves. No humming. No sticking. And due to a time delay between successive operations, chattering and fluttering usually caused by momentary current interruptions, are prevented.

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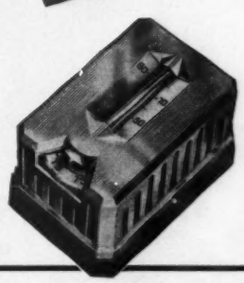

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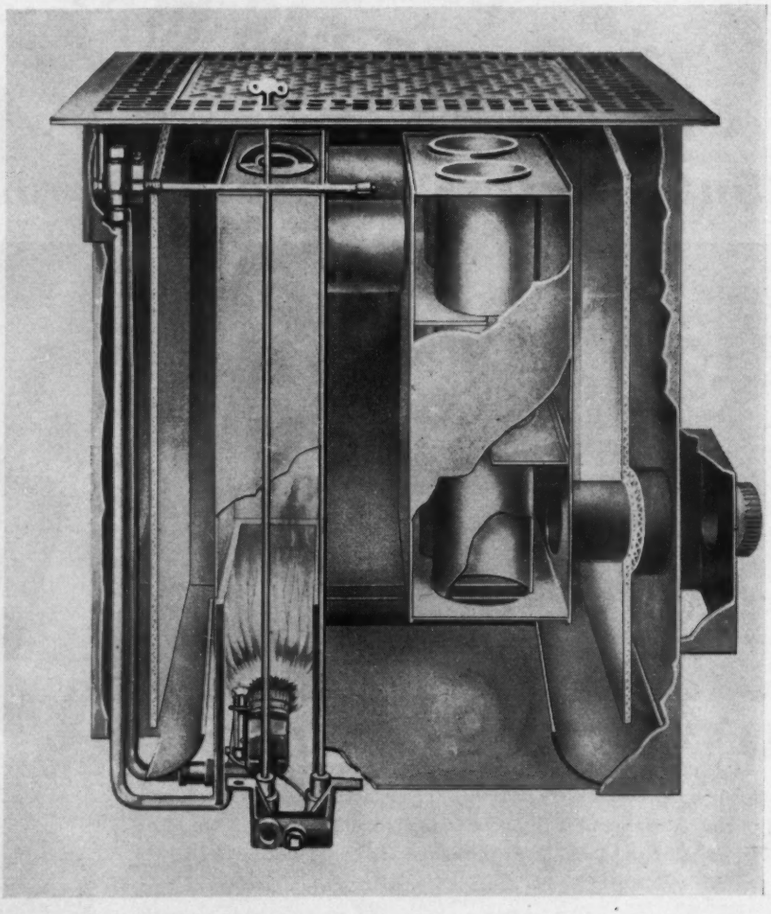

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dressed, and she does not have that purposeful air about her which people assume when they are already determined to purchase something. These are the things you deduce from her outward appearance. But you do know this: if she is a genuine prospect, she has the three primary decisions to make. So you plan your contact to find out if she needs what you are selling—let us say it is gas ranges.

Your first query is therefore: "Can I show you a gas range, madame?" The chances are she will reply, "Thank you, I am just looking around." You have anticipated that. You know she is interested, but she has not convinced herself of the real need for a new range. You say, "We are very glad to have you look around. Have you seen the new CP ranges?"

Now you point to one of the models on the floor, perhaps lift the cover to disclose the top burners. Suppose you have selected a six burner range. She exclaims, "Six burners! I've always wanted a range with six burners." This is your opening. You frame a question immediately to ascertain why she likes six burners, which will give you a clue to the size of her family, their eating habits, and the kind of range she now possesses.

Up to this point a casual observer might say that your approach has been aimless, unplanned. But has it? You are attempting to arrive at an answer to that first question which you know the prospect must answer before she is fairly on the road to a sale. Do I need this range? You cannot help her answer that question intelligently until you know her case history. And your approach so far has been an effort to learn something of Mrs. Prospect's background.

In our next chapter this analysis will be continued.

A.G.A. Approval Standards Go to Industry this Month

THE subcommittee on Approval Requirements for hotel and restaurant ranges, unit broilers, and deep fat fryers at its last meeting held on July 10, 1939, at the Association's Cleveland Testing Laboratories drafted final revisions to the American Standard Approval Requirements for hotel and restaurant ranges, Z21.3-1938 and to the Tentative American Standard Approval Requirements for deep fat fryers. These two sets of standards are now off the press and will be distributed to the gas industry about the first week of this month.

Requirements for hotel and restaurant ranges have been extended to include requirements for unit broilers. For this reason, the title of this set of standards has been revised and will read, "American Standard Approval Requirements for Hotel and Restaurant Ranges and Unit Broilers." Important revisions proposed include the recommendations of the subcommittee on test gases and test pressures, and bring this set of requirements in line with those for other gas appliances and extend approval of hotel and restaurant ranges and unit broilers for use with mixed gases which are being more widely distributed in a number of sections of this country. These changes are subject to the ratification by the A.S.A. Sectional Committee, Project Z21, A.G.A. Approval Requirements Committee.

Tentative standards for deep fat fryers were approved by the subcommittee to be distributed to the industry for criticism after extending these requirements to conform to those for other gas appliances. At the same time, the scope of these requirements was limited to apply to deep fat fryers with a maximum cooking fluid load of 300 lbs. In this respect, it was believed that larger sized units are often individually engineered for specific application, and are, as a result, installed to provide safe and satisfactory performance.

Criticism and comments of the above sets of requirements will be considered by the subcommittee at its next meeting. All comments should be addressed to R. B. Harper, chairman, A.S.A. Sectional Committee, Project Z21, A.G.A. Approval Requirements Committee, care of the American Gas Association Testing Laboratories, 1032 East 62nd Street, Cleveland, Ohio.

■ ■

Ohio Fuel Gas Co. Conducts Free Home Heating Survey

An intensive sales campaign on modern gas heating equipment, which began on August 1, will continue throughout the fall by the Ohio Fuel Gas Co., Columbus. It is being featured by a free heating survey of homes of customers who are interested in gas heating, the survey being conducted by trained men and checked by heating engineers.

M. K. McKelvey, district sales manager, is in charge of the campaign.

Hitchman Elected Chairman Of Appalachian School

AT the second annual Appalachian Gas Measurement Short Course held at the School of Mines, West Virginia University, Morgantown, West Virginia, August 22, and 23, 1939, Ray W. Hitchman, superintendent of gas measurement for the United Fuel Gas Co., Charleston, W.Va., was elected chairman of the school for the coming year.

R. W. HITCHMAN

This school, the first of its kind in the eastern United States and the third in the country at large, was attended by over 400 gas men comprising representatives from 19 states, the District of Columbia, and Canada. In addition to the prepared papers and formal proceedings presented on the theme of the Course, "Theory and Practice of the Measurement of Gases," numerous informal and unreported seminar classes were conducted continuously throughout the three days' meetings.

The program was planned largely by Dr. C. E. Lawall, president of the University, assisted by Prof. G. R. Spindler and others of the School of Mines, H. J. Wagner, the retiring chairman, and B. P. Stockwell, engineers of the Public Service Commission, together with the executives and engineers of the utilities and gas equipment manufacturers.

■ ■

Dealers Boost Sales In Brooklyn Union Contest

Appliances worth $390,586.41 were sold by dealers in the Brooklyn (N.Y.) Union Gas Co.'s territory in a recent sales contest which lasted four months. An additional $48,600.06 worth of appliances was sold by the company as a result of dealers' leads submitted during the contest.

Cash prizes totaling $7,053 were awarded to the 289 leaders in the contest. A total of 710 dealers competed. Prizes were awarded to dealers who accumulated 10 or more points, the points being allotted on the value of the equipment sold.

James J. Deely, retail sales supervisor, and William B. Hewson, house heating supervisor, addressed the winning dealers at the time of the presentation of prizes.

■ ■

Gas Heating Urged in N. M.

An extensive gas heating campaign, which began in the summer and will run through December, was recently outlined again by the Lea County Gas Co., El Paso, Texas, for dealers and plumbing contractors in Silver City, Bayard, and Central, N. M. C. C. Tucker, vice president and general manager, presented a sales talk to managers and dealers in that territory, emphasizing the safety, convenience and economy of gas over other types of fuel.

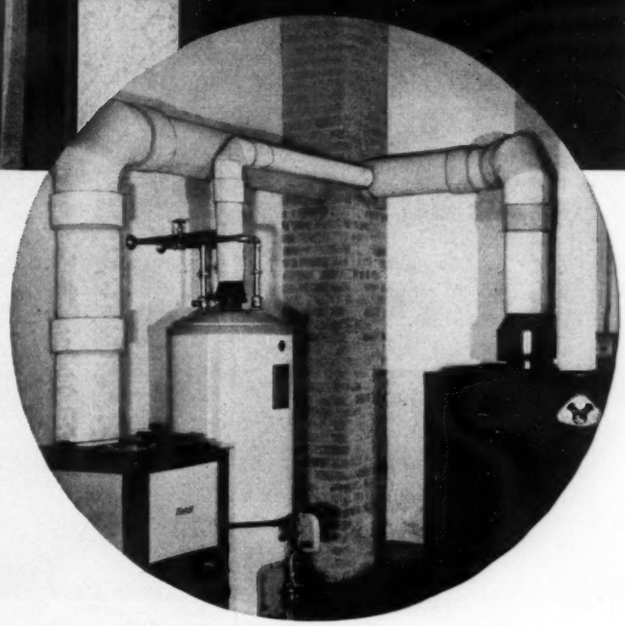
■ ■

Ice Plant Changes To Gas

The State Fuel Supply Co., of Oklahoma City, has contracted to supply natural gas to the Fort Cobb Ice Co., to fuel a 30-hp. engine converted from the use of gasoline. Gas company officials say that the conversion has reduced the monthly fuel bill of the 10-ton ice plant from $150 to $100.

Helps KEEP CUSTOMERS SOLD on GAS FOR THE "4 BIG JOBS"...

RAPID INSTALLATION is made possible by the ease with which J-M Transite Flue Pipe is handled. A complete line of fittings . . . a full range of sizes in both round and oval form . . . make assembly simple under any conditions.



EVERY DAY, you're selling more home owners on the reliability of gas for heating, cooking, refrigeration and hot water. But once the sale is made, you've got to make sure the appliance *stays* sold. That calls, among other things, for efficient venting systems. And, by specifying J-M Transite Flue Pipe for all your venting jobs, you assure long, dependable service . . . with maximum assurance of permanently low maintenance costs.

These important advantages are due to Transite's asbestos-cement structure. It is exceptionally resistant to weather and corrosion, cannot rust or burn, and is listed by the National Board of Fire Underwriters. Furthermore, Transite is quickly, easily installed, even in restricted working quarters, and never requires paint to preserve it. Grayish-white in color, it is neat and attractive and cannot stain adjoining parts of the building.

Customers appreciate the efficient, virtually trouble-free service of Transite Flue Pipe systems. You'll find their satisfaction works to sell more appliances. Why not get full details on this modern vent pipe? Write for Brochure TR-13A. Johns-Manville, 22 E. 40th St., New York City.

HIGHLY CORROSION-RESISTANT because of its asbestos-cement composition, Transite Flue Pipe keeps maintenance low. It gives dependable service that keeps customers sold on the convenience of using gas for the "4 big jobs."

AT THE NEW YORK WORLD'S FAIR
be sure to visit the J-M Building. And don't miss the interesting use of J-M Transite Flue Pipe in the American Gas Association Building.

Johns-Manville TRANSITE FLUE PIPE

On Training Your Employes To Know Their Business

• R. V. DAVIS, Southern California Gas Co., Los Angeles, Calif., in a paper, "Knowing Your Business," presented before the 46th Annual Convention of the Pacific Coast Gas Association, San Francisco, Calif., September 6-9, 1939.—(Abstract by G A S.)

MANAGEMENTS of many utilities realize that employes should have more than a speaking acquaintance with the things they have to sell, yet probably no one of the terms "sales training," "job training," "sales education" or similar expression, has ever been clearly defined.

R. V. DAVIS

Because a knowledge of gas utilization, knowing the product and how it works, is of inestimable value to a gas appliance salesman, it is the author's opinion that any expression used to describe an activity designed to help people sell gas and gas appliances should automatically mean that gas utilization has been included.

For example, when a salesman demonstrates the proper use of gas fuel in a modern appliance and a customer is definitely made to understand how benefits for him are produced, a sale can readily follow.

Thus, training planned for gas company sales personnel should include reasons why gas appliances behave as they do, and this means a study of gas appliance operating principles.

This type of information should be made available not only to gas company employes, but also to persons employed in a sales capacity by appliance manufacturers, distributors and dealers. This must be accomplished by a different method than used for gas company employes and deserves a distinctly specialized treatment.

Some Reasons Why

The following points present obvious reasons why employes should be subjected to some form of training:

1. Any gas company employe, and particularly any sales department employe, is apt to be regarded by friends and customers alike as being expert in all phases of the gas business. Is it not beneficial to both the employe and his company when he can answer customers' and prospects' questions?

Think of the effect on the employe's morale when he fails to satisfactorily answer a question. There is also the effect on the customer's attitude toward both the employe and the company when a satisfying answer is not forthcoming.

2. It is said that a person's interest in any subject is directly proportional to his knowledge of that subject. If this is a fact, then a well informed employe will talk and sell gas, gas service and gas appliances because he wants and likes to do so, not because he feels it to be a part of his job.

3. Before salesmen can sell gas most effectively, they, themselves, must be sold on its merits and be enthusiastic about it. Customers, too, must at least accept gas as a satisfactory fuel before they can be sold the finest gas appliance ever designed or produced. Most certainly, the gas appliance and gas fuel should be sold as a unit. One is valueless without the other.

4. Because of the nature of the work, salesmen are exposed to competitive sales propaganda even more than is the general public. Proper sales training including utilization principles will prepare salesmen to successfully refute competitive claims.

5. Presentation of a uniform front, by insuring that all representatives of the gas industry agree on fundamentals used in their individual sales stories, is a thought that has considerable acceptance.

Manufacturers, distributors and dealers in gas appliances in training their salesmen to go out and sell, all stress their own particular line. Therefore, it is obvious that if the job of preparing salesmen to sell gas is to be done, gas utilities must do it.

Unfortunately, many of the sales training activities which are being attempted are not planned with definite objectives in view. Many plans fail to distinguish between new and experienced employes. It seems only logical that all gas company sales employes should be trained by means of a definite, fixed program, this program to be so organized that, after a predetermined length of time, each employe would be in possession of the fundamental facts related to gas, gas service and gas appliances and prepared to go on to specialized courses.

Compiling the Course

In compiling a basic training course, certainly the three basic functions of production, transmission and distribution, should be covered in a general informative manner. Points to be mentioned are: where and how gas is produced; how much gas is used per day by the employe's company; number of miles of transmission main, number of compressor stations, information about distribution receiving stations, mechanics of gas distribution, number of meters in use and general facts about services, meters, regulators and their functions.

This general story should not be detailed. The most important result is to give to the employe an understandable picture of the industry for which he works.

Touch briefly upon the national picture of the gas industry. Point out the money invested in the business, give national statistics, and drive home the fact that the best engineering brains in the country have made gas service possible. Stress dependability—gas is always on tap, always present where and when it is needed.

Gas energy should be studied. Show where, why and how gas is best for the four big jobs. Gas may be defined as the rapid combination of oxygen contained in air with gas, producing heat, or both heat and light. The sales point contained in that sentence is *speed*.

A study of combustion will show that natural laws compel a properly

CALENDAR

October

American Gas Association — 21st Annual Convention, New York City, October 9-12.

Empire State Gas and Electric Association — Annual Convention, Westchester Country Club, Westchester, N. Y., October 19-20.

Gas Industry Day — New York World's Fair, October 9.

Midwest Industrial Gas Sales Council — Palmer House, Chicago, October 26.

National Metal Congress and Exposition — Chicago, October 23.

National Safety Council — Atlantic City, N. J., October 16-20.

Public Utilities Association of West Virginia — 21st Annual Convention, the Greenbrier Hotel, White Sulphur Springs, October 6, 7.

November

American Petroleum Institute — 20th Annual Meeting, Stevens Hotel, Chicago, November 13-17.

NORDSTROM VALVES *on Cobweb Lines always instantly ready to spring into action*

Seldom-valved lines, "freighted with cobwebs," so-to-speak, can harbor danger and trouble. Suppose the valve is frozen tight by corrosion, erosion or otherwise —and you have to open or close it quickly. What then?

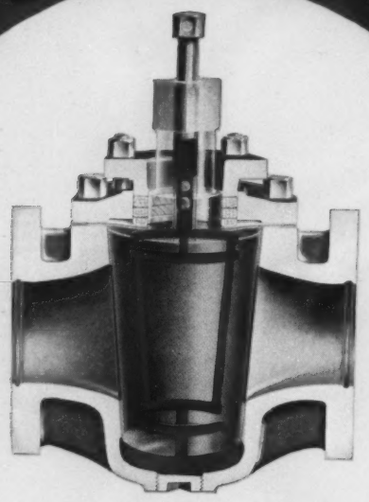
¶ No such predicament confronts you when your lines are equipped with Nordstrom Valves. They can "go for years" without turning, but are ready for instant action at any critical moment. This safety factor is particularly significant on gas lines, gasoline lines, ammonia lines, pipe lines and numerous emergency lines.

¶ *Patented "Sealdport" lubrication is the protective principle; it insures easy valve operation at all times.*

Nordstrom 16" Semi-steel Valves on a main transmission gas line

for diversified GAS SERVICES

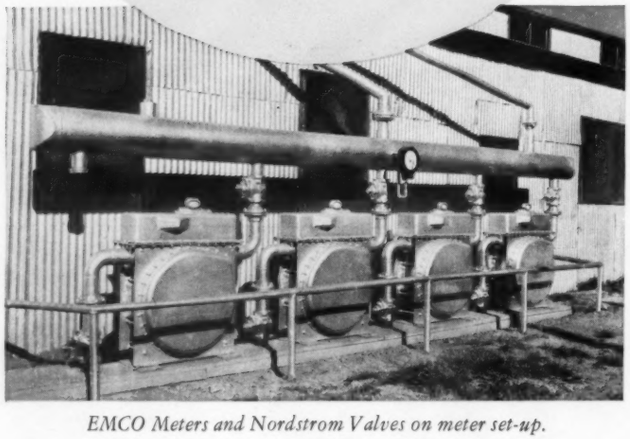
Nordstrom Valves on outgoing feeder lines in control pit of a Michigan gas company.



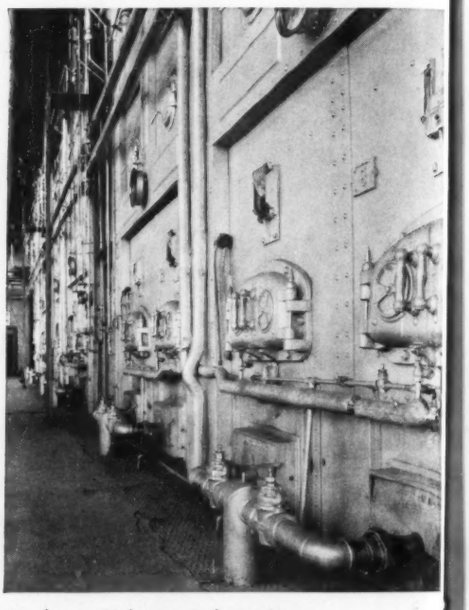
STANDARD TYPE

A city distribution line, low-pressure, Nordstrom-controlled.

Installed at strategic points, Nordstrom Valves enable gas companies to block off definite districts almost instantly, in an emergency. The hazard of a frozen valve is eliminated. Nordstroms likewise avoid the danger of a valve failure such as broken discs and corroded stems, thus assuring uninterrupted service. A Nordstrom can always be opened regardless of unequal pressure in the line. On very low pressure lines, say 1 to 5 pounds, leakage is difficult to prevent with ordinary valves. However, Nordstroms hold any pressure from vacuum to the highest with equal facility. The plug, completely sealed with "Sealdport" lubrication, prevents leakage internally or externally.



EMCO Meters and Nordstrom Valves on meter set-up.



Nordstrom Valves on industrial gas lines – burner installation

Nordstrom Lubricated Valves as large as 30" are installed on America's principal transmission lines from gas fields.

On city distribution lines, valves up to 8" can be equipped with low or high head extensions for sub-surface operation. Locking devices are also available. Lubricated curb cocks and meter cocks are also supplied.

Gas companies find it advisable to recommend Nordstroms on industrial burner and boiler installations.

MERCO NORDSTROM VALVE CO.

A Subsidiary of PITTSBURGH EQUITABLE METER CO.

WORLD'S LARGEST MANUFACTURERS OF LUBRICATED PLUG VALVES; GASOLINE, OIL & GREASE METERS

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PRODUCTS: **Nordstrom Plug Valves • Nordstrom Air, Curb and Meter Cocks • Nordstrom Valve Lubricants • EMCO Gas Meters • EMCO-McGaughy Integrators • EMCO Regulators • Pittsburgh Meters for Gasoline, Grease, Oil, Water and other Liquids • Raybould Couplings • Stupakoff Bottom Hole Gauges**

NORDSTROM VALVES

WITH PATENTED "SEALDPORT" LUBRICATION

Only Nordstroms meet every major valve need

adjusted gas burner to be *clean*—one of the most important sales points. How gas is utilized in ranges, water heaters, house heating appliances and refrigerators form the remainder of the course. All that a training course of this type can hope to accomplish is to furnish a simple structure of sound knowledge upon which the sales employe can build his super-structure of sales presentations and how to use them most effectively in presenting a convincing sales interview.

The Best Methods

Many discussions have been held relative to the best method of presenting training courses of this nature. There are the following methods: (1) lecture, (2) group conferences with selected, qualified employes as group leaders. No supervisors present. (3) Combination conference and lecture.

Whenever subject matter is factual, a combination of lecture and conference is to be preferred and will produce the best results. Present the facts. Urge class members to ask questions. Use whatever methods are necessary to get the individuals in the classes talking. Keep control of the discussion, however, and, above all, be sure they have the correct information about the subject before the discussion is ended.

The selection of the person to present the information and the planning of the lecture itself is of utmost importance. The use of moving pictures, slides and actual gas utilization equipment is to be highly recommended. If possible, supervisors in charge of the type of work under discussion should be invited to tell their stories. Inspection trips to various parts of the system, when feasible, add to the value of the training.

Other questions which invariably present themselves in discussions of this nature are, "How much will it cost?" "How much time is necessary?" and "Should the training be given on the employes' own time or on company time?" Both the cost and time items can be controlled and kept within specified limits.

When arrangements can be made to give this training on company time, management can expect greater results from it. In effect it is a part of the employe's job and corresponding effort should be required to master the subject matter.

A salesman of gas ranges should be more effective if he *knows* from actual experience what modern gas ranges will accomplish. Therefore a sales personnel cooking school was recently conducted by the home service department for certain employes of Southern California Gas sales department.

Ten CP gas ranges were installed and adjusted for normal operating conditions. Each class consisted of 20 persons and two persons were assigned to each range. The time necessary to complete the course was 12 hours per employe. There were four three-hour sessions held for each class.

Those in attendance were not required to spend time in learning to mix ingredients, or in how to prepare food for the actual cooking operation. They were, however, expected to perform all range manipulations necessary to cook the food products. Approximately 50 per cent of the time was utilized for actual cooking operations and the remaining 50 per cent for demonstration and discussion.

During demonstrations and discussions reasons for certain adjustments and reasons for installation requirements were clearly explained.

Although this paper is not expected to provide the answer to the employe training problem, yet some few basic conclusions have been reached:

1. Employe training is a problem to be solved in all gas companies.
2. Gas utilization should be the basis upon which sales training courses are built.
3. Proper training of employes will pay dividends.
4. All employes who contact the public should have training. This training should be more intensive for sales personnel than for other public contact employes with possible exception of distribution department employes.
5. Only by some sort of organized training plan can we be sure of our representatives knowing the product.

Holloway Announces 1940 Leaders for P.C.G.A.

THE 1940 Section and Committee Chairmen named by President-Elect Holloway to lead the important committee work of the Pacific Coast Gas Association for the coming year are:

Accounting Section—Chas. Grunsky, Coast Counties Gas & Electric Co.

Sales & Advertising Section—A. F. Rice, Southern California Gas Co.

Technical Section—Harry J. Smith, Pacific Gas and Electric Co.

Co-operative Advertising Committee—J. S. Spaulding, Southern California Gas Co.

Educational Committee — Harrison Musgrave, Southern Counties Gas Co.

Women's Committee—Prudence S. Hury, Southern Counties Gas Co.

The Technical Section leaders appointed by Harry J. Smith, chairman of the Technical Section, are:

Distribution Committee—C. P. De Jonge, San Diego Consolidated Gas & Electric Co.

Transmission Committee — Grove Lawrence, Southern California Gas Co.

Utilization Committee—John Mueller, Payne Furnace & Supply Co.

Division officers for the Manufacturers' Section were elected as follows:

Range Division: R. J. Merritt, chairman; E. J. Hinchey, vice chairman.

Furnace Division: C. O. Menig, chairman; R. E. Fraser, vice chairman.

Direct Heating Equipment Division: E. L. Payne, chairman; Roy Ohnimus, vice chairman.

Water Heater Division: B. A. Hinckley, chairman; W. G. Cartter, vice chairman.

Accessories Division: Hal Singleton, chairman; A. W. Ray, vice chairman.

■ ■

Minneapolis Gas Light Co. Gets Federal Contract

An additional annual load of 342,000 M c.f. is the result of two contracts recently signed with the Federal government by the Minneapolis Gas Light Co., according to Harry K. Wrench, vice president and general manager. The War Department has agreed to purchase an estimated 204,000 M c.f. for building and water heating at historic Fort Snelling, and the Veteran's Bureau has contracted for 138,000 M c.f. annually for heating purposes at the Veteran's Hospital.

George Bean, American Gas Association representative in Washington, D. C., is given credit for valuable assistance in obtaining these contracts for the Minneapolis Gas Light Co.

■ ■

Cushing Renews Franchise With Consolidated Gas Corp.

Citizens of Cushing, Okla., August 29 voted a 20-year natural gas franchise to the Consolidated Gas Utilities Corp., of Oklahoma City, Okla. The vote was 238 to 10.

The Consolidated Gas Utilities Corp., started distributing natural gas in Cushing in 1928 and now has 2400 consumers in the city. It purchases gas wholesale from the Central States Power & Light Corp. for distribution in Cushing.

A Nationwide Survey of Gas Odorization Methods

• ODORIZATION OF GAS has been practiced in the United States on an operating basis for approximately 10 years, and it is now generally recognized as a desirable expedient for which special apparatus has been developed and placed on the market. This development has been traced rather completely by Western Gas and by its successor, G A S, which now presents portions of a paper presented by H. G. CALDON, Industrial Fuel Supply Co., of Los Angeles, before the 46th Annual Convention of the Pacific Coast Gas Association, San Francisco, Calif., September 6-9, 1939. —(Abstract by G A S.)

IN ORDER to determine how much natural gas is odorized and to obtain authentic information for this paper regarding odorants, injection methods, pressures and temperature conditions, questionnaires were sent to all natural gas distributing companies and company divisions listed in the 1938 Brown's Directory as having an average send-out of over 3,000,000 cu. ft. per day, and to many of the smaller companies and distributors of mixed gas. One hundred and twenty-seven replies were received, many of which were consolidated reports covering several divisions.

Table No. 1 and Table No. 2 show the number of reporting companies, grouped under various headings in relation to odorization and the average daily send-out for each classification.

For the United States, the total sales of the reporting companies of 2,151,000 M c.f. per day, are 65 per cent of the American Gas Association's estimate of the total gas sales for 1938. Seventy per cent of the gas sold by the reporting companies is odorized. If the reports which were received are a true cross-section of the gas industry, there is an average of 2,334,000 M c.f. of odorized gas sold each day.

Table No. 3 shows a recapitulation of the more important data covered by the questionnaires. In addition to the figures and answers which were sent in by the gas companies, many pertinent remarks were made, which were helpful in the preparation of this paper.

Calodorant and Pentalarm are the two most commonly used products for continuous odorization of natural gas. Both products are used for the odorization of individual house services as well as installations up to millions of cubic feet per hour.

The answers indicated that the companies using Calodorant inject an average of 2.01 gals. per million cu. ft. of gas which is practically the amount recommended by the manufacturer. Those using Pentalarm inject an average of 1.13 lbs. per million which is 50 per cent more than the manufacturer suggests. Only part of the companies reported regarding their allowable variation in rate of odorant concentration — the average variation being 21.05 per cent.

Many of the companies who reported benefits in reducing unaccounted for losses inject more than the recommended amount of odorant into their mains. An extreme example is a midwestern company which injects 5 gals. per million cu. ft. in the summer and increases its rate to 10 to 12 gals. per million during the winter months.

Approximately 15 per cent of the companies increase their injection rate during the winter while the same number increase their rate in the summer. In both cases, the average increase in the rate of injection is approximately 50 per cent.

The questionnaire shows that gas is odorized over a wide range of temperature and pressure conditions. The average of all companies reporting indicate a temperature variation of 38° F. for gas and a corresponding variation of 65° F. in the odorizers. The extreme range reported was 85° F. for the gas and 150° F. for the odorizers. Likewise pressure ranged from inches of water to 600 lbs. per sq. in. gage.

The odorants available do not have a constant volatility and are, therefore, materially affected by temperature and pressure variations. Since a 20 to 30 degree rise in gas temperatures will double the amount of odorant absorbed by the gas stream, considerable inaccuracies in odorant absorption are reported with by-pass odorizers. Some companies bury their odorizers to improve this condition and reduce the temperature variation, but the average range of gas temperatures encountered precludes accurate results. Other companies use outside energy, themostatically controlled, to maintain a uniform temperature in the by-passed gas. This method is successful except in the case of a failure in the heating medium.

The accuracy of the drip type odorizer, in which an orifice is used to meter the injection, is practically unaffected by temperatures above freezing. Lower temperatures frequently do reduce the rate of injection. One possible explanation is, that water in the odorant freezes and clogs the odorant orifice or valve. A common preventative is to house the odorizer or keep a lighted electric globe near the odorant orifice. Drip type odorizers are not accurate where less than a pint of odorant is to be injected per day. For larger flows, however, those with constant liquid level in which the rate of injection is controlled by the differential above and below a gas line orifice give substantially proportional odorant injection. The questionnaires show more gas odorized with this type equipment than all others combined.

The accuracy of the meter operated pump type of odorizer, another recent development, should not be affected by temperature and it can be furnished with a valve to compensate for some variation in pressure. It should be noted, however, that the enclosing of a meter in a casing and equalizing the pressure inside and outside of the meter will not make it feasible to operate the meter, at 200 or 300 lbs. pressure, at the same index rate it

TABLE NO. 1. QUESTIONNAIRE SUMMARY BY STATES

State	No. of Companies Reporting	Odorizing Expect to Odor. Pur. Odor. Gas	Sour Gas	Odorize Occasionally Do Not Odorize Wholesalers Producers
Alabama	2	1		1
Arizona	2	1	1	
Arkansas	2	2		
California	9	9		
Colorado	3	1		2
District of Columbia	1	1		
Delaware	1			1
Georgia	3	3		
Illinois	6	5		1
Indiana	2	2		
Iowa	2	2		
Kansas	5	1	1	3
Kentucky	1			1
Louisiana	4	4		
Michigan	6	6		
Minnesota	3	3		
Mississippi	1	1		
Missouri	6	4		2
Montana	2	2		
Nebraska	4	2		2
New Mexico	2	1	1	
New York	7	5		2
Ohio	5			5
Oklahoma	6	1		5
Pennsylvania	11	3		8
South Dakota	1	1		
Tennessee	2	1		1
Texas	17	16	1	
West Virginia	5			5
Wyoming	1	1		
Canada	5	2	1	2
	127	81	5	41

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Reduces gas leakage 25 to 50%. Eliminates manual adjustment of regulators. Reduces consumer complaints. The outstanding development in gas pressure control during past 10 years.

TIME-TEMPERATURE BOOSTER

Controls reduced pressures automatically according to atmospheric temperature changes! Eliminates manual adjustment of district regulators. Reduces "unaccounted for" gas. Adaptable to all low pressure systems.

Also CONTAINS 24 PAGES FISHER CAPACITY CHARTS

These Charts enable you to size FISHER regulators more accurately. They often show that smaller regulators can be used thereby saving money. Reliable. Easy to use. Invaluable to plant men and engineers.

ILLUSTRATING AND DESCRIBING more than 75 different FISHER Regulators for the gas industry, the new FISHER Catalog No. 39 is the most complete book of its kind ever issued by FISHER. It contains interesting installation photos, flow charts, diagrams and tables. Dimensions, working pressures and prices are given in complete detail. The whole book has been carefully designed to make your work easier, more accurate. Opens flat. Easy to use.

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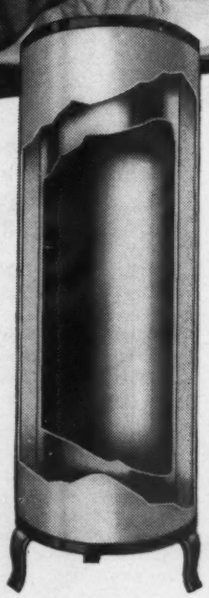
Three reasons why Everdur makes happier customers

Increased good will . . . steadier gas consumption are yours "for keeps" when water heaters have tanks of non-rust Everdur

So far as rust is concerned, water heaters with tanks of Everdur Metal give satisfactory service indefinitely. They protect the steadiness of the gas load, for rust can never interfere with the heater's performance or shorten its life. Everdur tanks mean fewer service calls...long-run economy for both owner and utility...and happier customers.

Everdur Tank Metal is The American Brass Company's copper-silicon alloy ...96% pure copper...yet it has the tensile strength of mild steel. It is rust-proof, highly resistant to corrosion, and readily fabricated. Because of these properties, leading gas water heater manufacturers use Everdur for non-rust models.

3949-A



Everdur TANK METAL

ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY, General Offices: WATERBURY, CONNECTICUT
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont. • *Subsidiary of Anaconda Copper Mining Co.*

"EVERDUR" is a trade-mark of The American Brass Company, registered in the United States Patent Office.

TABLE NO. 2. RECAPITULATION OF GAS COMPANIES REPORTING

Number		*Average M c.f. Per Day*	*Per Cent of Total*
74	Odorizing	1,517,000	69.30
2	Expect to odorize soon	7,000	.32
5	Purchase odorized gas	34,000	1.55
5	Sour gas	39,000	1.78
1	Mixed gas	50,000	2.28
5	Odorize occasionally	147,000	6.72
23	Do not odorize	395,000	18.05
12	Wholesalers and producers	2,189,000	100.00
127			
122	U. S. A. companies	2,151,000	98.3
5	Canadian companies	38,000	1.7
	Total for year	798,985,000 M c.f.	

NOTE: On reports which did not show gas send-out the amount shown in the 1938 Brown's Directory was used. Where no figure was shown in Brown's the amount was estimated on the basis of 300 cu. ft. per day per service. Sales of Producers and Wholesalers were purposely omitted.

TABLE NO. 3. QUESTIONNAIRE RECAPITULATION

Average Odorization Send-out		
with Calodorant		1,181,000 M c.f. per day
with Pentalarm		247,000 M c.f. per day
with other Odorants		89,000 M c.f. per day
Average Concentration		
Calodorant		2.01 gals. per MM
Pentalarm		1.13 lbs. per MM
Pressure		
Average Maximum		77 lbs. per sq. in. gage
Overall Average		147 lbs. per sq. in. gage
Temperature		
Gas		
Average Maximum		78° Fahrenheit
Average Minimum		40° Fahrenheit
Odorizer		
Average Maximum		90° Fahrenheit
Average Minimum		25° Fahrenheit

Type Odorizers Used

Direct Injection	Number	Ave. M c.f. Gas Odorized per Day
Drip Type	306	131,700
Drip Type with Differential Control	49	121,000
Drip Type with Differential Control and Constant Liquid Heat	117	872,500
Meter Operated Pump Type	1	1,500
Pressure and Differential Controlled Type	4	86,000
By-Pass and Wick Odorizers		
Individual House Service Odorizer	3,979	1,800
Simple By-Pass and Wick Types	239	198,000
By-Pass Constant Level	5	8,600
By-Pass with Constant Level and Constant Temperature	6	68,700
By-Pass with Liquid Seal and Overflow	13	27,600
Is Your Trend to District Odorizers or Trunk Line?		
District	20	
Trunk Line	43	

	Yes	No	No Answer
Do the results justify the expense?	69	1	4
Benefits obtained in:			
Reducing Unaccounted For Losses	37	12	25
Customer Protection and Safety	61	0	13

was intended to operate on at low pressure, since the friction loss and gas density are proportional to pressure.

Although the accuracy of all of the odorizers in general use is affected by variation in pressure, this source of error does not ordinarily cause trouble because odorizers are usually installed at a point on the line where the pressure is fairly constant.

The only odorizer which compensates for pressure variation is the pressure differential controlled odorizer reported in Pacific Coast Gas Association Proceedings, 1938.

Temperature and load variations make accurte odorizing of individual house services particularly difficult. As the odorant consumption is only from 0.10 to 1.0 quarts per year, wick or by-pass odorizers are the only types adaptable. As house service odorizers are usually subject to outdoor temperatures, the by-pass type is subject to the same inaccuracies previously mentioned. On a 90 degree day a by-pass odorizer will vaporize four to eight times as much odorant as on a 30 degree day providing the gas consumption is the same.

The accuracy of the wick type house service odorizer is affected more by load than temperature. Inasmuch as the gas stream has the capacity to absorb many times as much odorant as is required for satisfactory odorization, the rate of injection is throttled by exposing only a small amount of a small wick to meet average conditions. Rate of flow, temperature of gas, and height of odorant in container all affect the degree of odorization obtained.

Under satisfactory conditions of temperature and pressure, odorized gas may be transported hundreds of miles without appreciable decrease in the intensity of the odor.

The author wishes to express his appreciation to the 127 gas companies who filled out and returned the odorization questionnaires, and to the manufacturers of odorants and odorizers, particularly Harry F. Haldeman, Inc. for the information and assistance which they furnished.

■ ■

W. S. Bibb, Prominent Pipe Line Builder, Dies

W. S. Bibb, pipe line contractor of Valley Parke, Mo., died of pneumonia August 30, at the age of 47. Mr. Bibb was the holder of a contract for the construction of the Michigan Gas Transmission Corp.'s 16-mile, 24-in. line in Indiana. About two years ago Mr. Bibb was in charge of constructing four loops in Illinois and Missouri for the 281-mile loop line of Panhandle Eastern Pipe Line Co. Prior to that time, the Bibb Contracting Co. of Dallas, headed by W. S. Bibb, constructed the Southern and Central sections of the 230-mile line of the Michigan Gas Transmission Corp. and Panhandle Eastern Pipe Line Co., which brought gas service to Detroit, Mich.

■ ■

Wyoming Utility Salesmen Hold Two-Day Meeting

Managers and salesmen of the Northern Utilities Co., Casper, Wyo., met at Casper recently for their annual sales meeting. Principle speakers at the two-day meeting were L. L. Langworthy, general superintendent, Northern Utilities Co.; Carl Sorby, sales promotion manager, Geo. D. Roper Corp.; J. M. McIntyre, vice president and general manager of Northern Utilities.

■ ■

Ohio Co. Builds Model Home

The Ohio Fuel Gas Co., Columbus, has recently begun construction of an ultra modern all-gas home in Grandview, Ohio. The home, which is one of several being sponsored in that vicinity by the gas company, will be open for public inspection late in the fall. Wm. Hartzler is the contractor.

THE WOMAN'S *viewpoint*

Home Service Turns Its Eyes Toward the Men

By MARY LOUISE HURSTER

Home Service Director, Laclede Gas Light Co., St. Louis, Mo.

YES, home service caters to the male sex! After all, since the old adage tells us that the way to a man's heart is through his stomach, and home service basically deals with the preparation of food, we are actually serving men no matter how we look at it.

Statistics showed that men, more than women, are the real buyers of electric ranges. With this in mind, we decided to cater directly to the men and show them just what a housewife can do with a beautiful kitchen and modern gas appliances. Thus, it was decided to spend one evening a week demonstrating gas ranges to women and their husbands. After an informal supper, served around 6:30 o'clock, a 45-minute program was presented. On this program was the skit, titled "Mrs. Modern and Mrs. Antique," which was always well received and brightened up each cooking demonstration.

During these evening meetings, the men asked more questions than the women. In several instances, the men purchased ranges or refrigerators the same evening they were guests. A sales representative was always present to show the appliances and to answer questions concerning them.

A Male Demonstrator

Since men were interested in buying cooking appliances, we thought it might be more entertaining and might create more sales to have a man give a cooking demonstration. A talented young man in our department has become quite popular in St. Louis with his ability to put over a cooking demonstration for both women and men. By watching him, many men become so interested that they will step to the platform—when called upon to assist—even will cook under his direction.

Mr. Howard, our male demonstrator, has become so popular that he was featured with a young woman in our department in a skit similar to "Mrs. Modern and Mrs. Antique." He is the Magic Chef performing on the CP gas range, while she is the aunt from a small town performing on the old gas range. This skit has been cut down to a quick, forceful 30-minute performance given chiefly for men and women audiences.

No Women Admitted

After attending a meeting of executives of a large wholesale grocer company in St. Louis, the idea came to us to have demonstrations inviting only the men . . . *no women allowed!* This wholesale grocery company, which promotes the Nation-Wide stores, had wanted my opinion on giving their customers a recipe service featuring specials advertised each week. These gentlemen were invited to be the guests of The Laclede Gas Light Company the following month.

Forty men attended this meeting. After they had dispensed with their own business details, they asked Mr. Schlatter, our general sales manager, and myself so many questions about gas ranges that we sold a range and a refrigerator to two of the members within three days time. We concluded that if we could do that well by merely talking of our appliances to men, better results could be secured by giving a 30-minute performance to other groups.

Recently, six meetings of men executive groups have been scheduled. Since these take place at night, and since we have full programs during the day with demonstrations at dealers' stores and in our own company, we do not have more than two business men groups at night during a month.

Not only do these contacts maintain good will, but they also give the business men of St. Louis an insight into a new method of promoting merchandise. It has a psychological effect on them—they remember that some night, not so long ago, their wives complained of "that old gas range." If the men can be sold the idea that the thought of remodeling the kitchen originated in their own minds instead of their wives', we are cooperating with the housewives *and* promoting *the gas industry!*

■ ■

Wisconsin Utility Figures Show Consumer Increase

Utility statistics recently issued by the Wisconsin Public Service Commission show that although the average number of gas customers increased in 1938 over those in 1937, total gas revenues declined. The average number of consumers increased 1.3 per cent while revenues declined 2.4 per cent and consumption 5.8 per cent. This decrease, the Commission estimates, was due to the decline in industrial consumption in 1938.

The Commission reports that the number of gas customers has increased yearly since 1932, resulting in 8.5 per cent more customers in 1938 than in 1932.

In 1938 the number of customers using gas space heating advanced 14.9 per cent; residential customers increased 1.2 per cent; commercial customers 0.8 per cent, and industrial customers 0.6 per cent.

In 1938 Wisconsin's price per M c.f. for residential gas was 20 per cent below the average for the United States, and the consumption was 27 per cent above the country's average. Average cost of gas for domestic consumption was $1.047 per M c.f., while the average commercial cost was $0.831 per M c.f. The industrial rate was $0.546 per M c.f.

■ ■

Lone Star's Foremen and Managers Hold Meeting

The annual meeting of foremen and managers of the Lone Star Gas System, Dallas, Texas, was held at the Dallas Gas Co.'s auditorium September 29. The program was arranged so that all companies would meet together in the morning, leaving the afternoon for various company and department meetings. The theme of this year's meeting was built around what the company is doing to improve service to customers. A quiz on information about the company was conducted.

■ ■

Enid, Okla., Votes 25-Year Franchise To Oklahoma Co.

A new natural gas distribution franchise was voted September 12, by citizens of Enid, Okla., to the Oklahoma Natural Gas Co., Tulsa, Okla. The vote was 1096 for, to 411 against.

The new franchise runs for 25 years and carries a city franchise tax of two per cent on gross domestic receipts. The Oklahoma Natural Gas Co., has owned and operated the Enid natural gas distribution system since 1928 when it purchased the property from the Oklahoma Gas & Electric Co.

ANOTHER of the REASONS for ROPER POPULARITY!

The New
EXTRA CAPACITY
Broiler

The Sheffield model Super De Luxe Roper Gas Range features the large extra-capacity broiler—a refinement that has "clicked" with housewives from the word "go."

It's big—a full 10 inches in height. It is equipped with the famous Astogril for ideal broiling performance. Because of the size of this amazing new broiler, it lets Milady broil extra-thick cuts of meat, fowl, etc. It also makes an ideal warming oven.

ROPER GAS RANGES OFFER *Features that Sell*

It's ROPER *Again for 1939*

● Every ROPER feature helps you sell more ROPER Gas Ranges. For every refinement has an exciting story to tell. ROPER will carry off top honors in any comparison. Your prospective customers will recognize its superiority. Learn all about the many ROPER Gas Range features now. Send for complete details.

GEO. D. ROPER CORPORATION

GENERAL SALES OFFICE AND PLANT: ROCKFORD, ILL.

WAREHOUSES:

Chicago: 343 So. Dearborn Street—Atlanta: 901 William Oliver Building—Los Angeles: 2481 Porter Street
Dallas—Cincinnati—Brooklyn—Danbury, Conn.—Oakland—Kansas City—Newark—Boston—Washington
Cleveland—Philadelphia—Roanoke

USE ROPER SALES PROMOTION PLANS

ROPER RANGES ARE IDEAL FOR USE WITH ANY TYPE OF GAS, INCLUDING BOTTLED GAS

Cathodic Protection On New Mexico's Deserts

By H. N. OLDHAM

Carlsbad District Manager, New Mexico Eastern Gas Co.

THE use of Cathodic Protection is relatively new in the New Mexico Eastern Gas Co., subsidiary of the Southern Union Gas Co. The first installation was made in February, 1938, on the 41-mile 8-in. welded main line carrying gas to Roswell, New Mexico, from the field junction some 14 miles east of Artesia, New Mexico. Extreme corrosion is experienced on the 4 miles immediately north of where this line crosses the Pecos River, and it has been consistently necessary to maintain this "hot spot," putting on an ever-increasing number of leak clamps. The use of leak clamps was proving poor economy, for soon after one hole had been repaired additional pitting would result in new leaks.

On this line extreme corrosion existed adjacent to the river. From the river bottom the line rises till an extensive salt flat is encountered two miles north. From this flat the line again rises and encounters another salt flat and lake some 4 miles north of the river. Many leaks had been found and repaired in the river bottom and salt flats. Additional leaks were even breaking out between the salt flats and the river bottom. As it is impossible to determine how much line a generator installation will protect without making the equivalent of an actual installation, it was decided to locate the generator and ground at the central salt flat, where the most extensive corrosion was being experienced.

Wind Driven Generator

Electric power was not available and as the average wind velocity in this territory is high it was decided to use a Jacobs 15-volt wind driven generator.

After choosing the location of the wind charger, right-of-way was obtained and the "ground" was made by burying 5-in. junk pipe some 500 ft. from the pipe line. This pipe was buried in a "U" shape, the closed 50-ft. portion of the "U" parallel to the pipe line, the 150-ft. legs of the "U" being at right angles to the pipe line. To insure a successful installation, two 350-ft. lengths of 5-in. pipe were buried one above the other and bonded together. The junk pipe was buried to a depth of 5 ft., which was 2 ft. below water level. Further to insure low resistance to the flow of current the pipe was thoroughly cleaned and the first backfilling was done with 6 tons of salt obtained from neighboring salt lakes.

A 48-ft. generator tower was used, the legs of which were set in concrete. A No. 0000 bare copper wire was strung on poles from the main line to the generator and from the generator to the "ground." (See Fig. 1.) At the "ground" the wire was attached to a 4-in. riser. This riser is necessary as the positive wire at the "ground" would be rapidly eaten away if allowed to contact the earth. It is shown in Fig. 2. Prior to putting the generator in service, permanent test stations were established at one-tenth mile intervals on both sides of the wind charger, to the river on the south and past the north end of the "hot spot." Readings were taken at each test station with a high resistance vacuum tube volt meter, one lead connected to the pipe line and the other connected to a soft copper rod driven into the earth some 6 in. from the pipe line. These readings have also been checked by using a copper sulfate electrode in place of the driven copper rod, as there is a possibility that the latter may cause false reading of the volt meter. These readings between the pipe line and the earth were then recorded. After these tests were made the generator was put in service and the tests repeated.

From these two sets of readings it was found that protection could be expected over a distance of some 2½ miles, as the readings indicated that a potential of at least three-tenths of a volt, tending to force a current into the pipe, had been created for this distance.

A volt meter and ampmeter had also been installed in the wind charger circuit. Using the reading from these instruments, the resistance between the generator, the "ground" and the pipe line was found to be less than one-fifth of an ohm. This low resistance indicated a very satisfactory "ground" had been obtained.

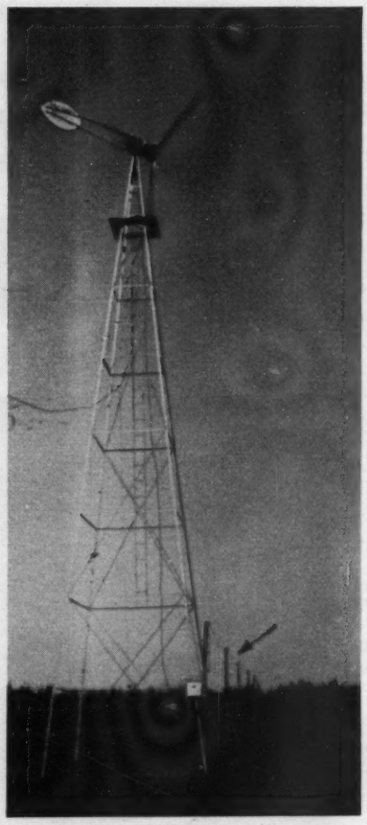


FIG. 1. View of wind charger. Arrow shows No. 0000 copper wire on poles.

At the time of installation a careful bar program was conducted and all leaks were clamped. As a record has been kept of all leaks on this line, the success of the wind charger is, of course, being determined by the reduction of additional leak clamps. During the time since this installation has been completed the results have been very pleasing. A definite reduction in leakage is evident. At the time the wind charger was put in operation, however, many pits were practically through the pipe, and such pits could only be expected to develop into leaks.

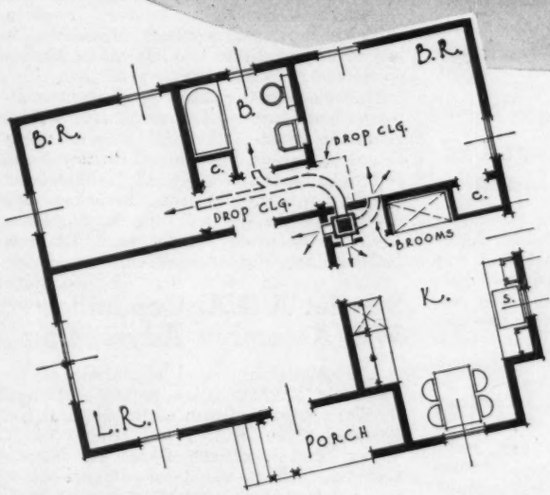
Leakage Diminishes

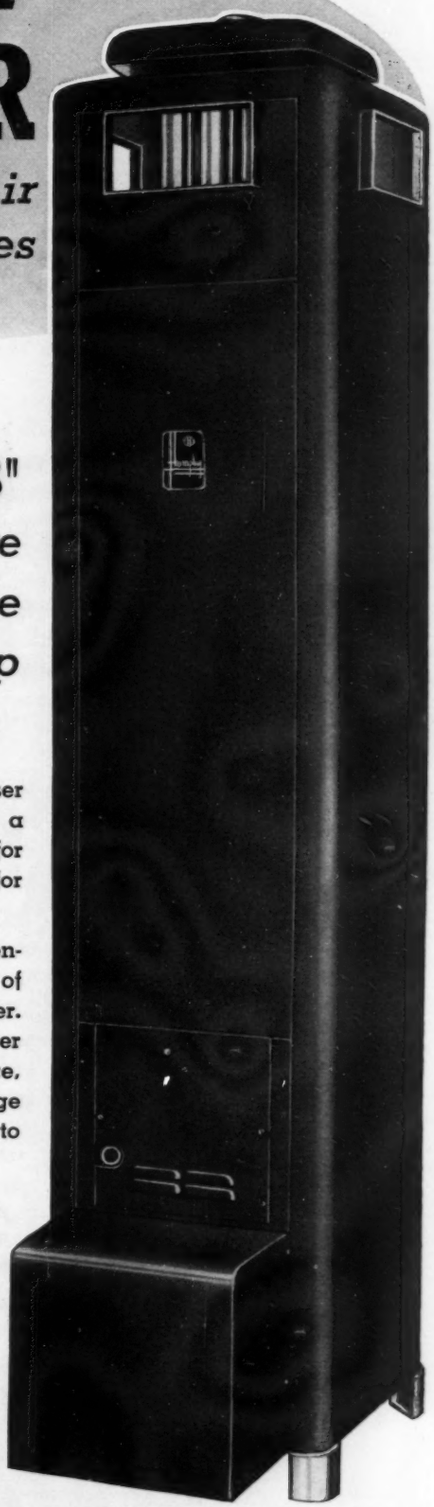
During the first few months this plant was in operation a few of these deeply pitted places in the pipe broke through, causing leaks. However, as months passed, leakage was no longer a problem on this section of line, this fact being forcefully brought out when abnormally high pressures were applied this past winter to take care of an increased load and leak trouble formerly encountered did not develop.

The success of this protection, in continuing indefinitely the life of this section of pipe line which would other-

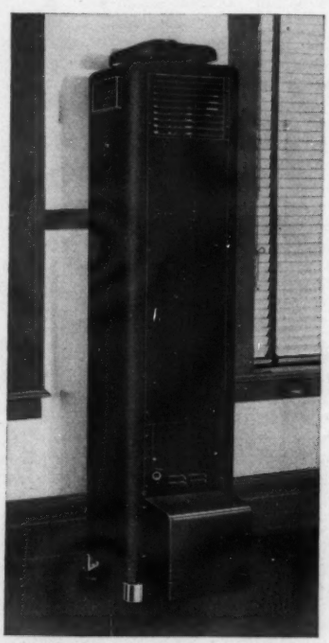
The HUMPHREY HEAT TOWER

A Truly Marvelous New Forced-Air Heater to Increase Gas Sales





Only
19" x 28"
Heats Entire Small Home Retail Shop or Office



For Offices-Retail Shops

The rich Hammerloid Brown finish of the Heat Tower will harmonize with the finest furnishings.

The dream of many a gas merchandiser has been realized. Here, at last, is a practical, compact gas heating unit for small homes—a modern stately heater for fine offices and retail shops.

The Humphrey Heat Tower is a scientifically designed "vertical" application of the famous Humphrey Gas Unit Heater. It has an input rating of 75,000 B.t.u. per hour, takes but 19" x 28" of floor space, yet delivers plenty of heat for the average small home, with fan-forced circulation to keep a steady even temperature.

The picture at the right shows the Heat Tower equipped with duct outlets on four sides for home installation, at the left is the grille design for offices and retail shops.

The Humphrey Heat Tower gives you new opportunities for building gas loads in your territory. Send for detailed information and portfolio of selling helps today.

GENERAL GAS LIGHT COMPANY
KALAMAZOO, MICHIGAN
23 Warren St., NEW YORK CITY 2nd Unit Santa Fe Bldg., DALLAS 475 Eleventh St., SAN FRANCISCO

FIG. 2. The author holds a connection of copper wire from generator to riser from "ground" bed.

wise have had to be replaced in the very near future, has led to additional installations. Two additional units have already been installed, work order is being issued for the fourth, and other units are being planned for the future.

On the last installation the general procedure of construction as outlined was followed. The resistance on this circuit is one-tenth of an ohm, which is considered as extremely low.

As salt beds, alkali flats, mineral water, etc., make corrosion one of the outstanding problems of gas companies in this section of the country, and unprotected pipe lines are being eaten away in certain areas within 24 months, cathodic protection is proving to be the answer to a very difficult and expensive question.

■ ■

Government Fixes Rental of $5 Per Mile for Pipe Lines

The United States government on August 12, issued regulations fixing a rental charge of $5 per mile per year for rights of way over the public domain for pipe lines held by gas companies and other pipe line concerns. Also, a rental of $5 per acre per year was set for the use of public lands upon which are located pumping stations or other structures in connection with the operation and maintenance of oil or gas pipe lines.

The penalty for failure to pay rental charges on or before 60 days from February 1, next, is forfeiture of right-of-way permits.

JACOBS WIND ELECTRIC CATHODIC UNITS

Thousands of miles of gas and oil pipe lines are being electrically protected by these plants.

Their successful performance throughout the United States and Foreign countries during the past several years for many of the leading pipe line companies is proof of their satisfactory and dependable performance.

The large slow speed direct drive generator is guaranteed against burn out. NOT ONE BURNED OUT DURING THE PAST TEN YEARS. No other similar equipment in America can equal that record. Large 14 ft. propeller, controlled by patented flyball variable pitch governor prevents added pressure against propeller blades and plant in any wind above 25 miles per hour.

Special natural gas engine driven units are also manufactured for Pipe Line Cathodic Protection.

Write for complete literature and details on these units.

THE JACOBS WIND ELECTRIC COMPANY, INC.

Pipe Line Division — Minneapolis, Minn. U.S.A.

America's oldest and leading wind electric manufacturers.

Many Towns Vote Franchises Along Peoples Natural Line

AS a result of favorable action of Jackson, Minn., voters in August, the Jackson council has given the Peoples Natural Gas Co., subsidiary of the Northern Natural Gas Co., a 25-year franchise for furnishing natural gas to that city.

The council has also entered into a contract with the gas company to supply gas for the steam boilers at the municipal light and power plant, formerly fueled with coal. The boilers will also be equipped with oil burning units for any emergency that might arise as a result of interruption to the gas service.

The line that will serve Jackson is the same one that will furnish gas to many towns in northern Iowa and southern Minnesota. It will run from Sioux City, Iowa, to Minneapolis and St. Paul.

Franchises to the same company have already been granted by many communities along the route of the pipe line, including Kingsley, Marcus, Paulina and Hartley, Iowa, and Worthington, New Ulm, Mankato and nearby towns in Minnesota. Franchises are expected to be granted soon in Sherburn, Truman, Welcome, Lake Crystal, Luverne, Lakefield and Pipestone, Minn.

■ ■

Special A.G.A. Committee Will Assemble Advertising

A specially appointed committee of the American Gas Association, named by Thomas R. Weymouth, chairman of the Natural Gas Section of the A.G.A., and headed by H. Vinton Potter, of the Oklahoma Natural Gas Co., will assemble institutional advertising data. Other committeemen are: D. C. Schnabel, Bozel and Jacobs, Inc., Houston, Texas; C. D. Greason, The Gas Service Co., Kansas City, Mo.; Otto C. Mauthe, Southern California Gas Co., Los Angeles, Calif.; and F. J. McKeeman, Columbia Engineering Corp., New York City.

The object of the committee's compilation of advertising matter pertaining to the natural gas industry will be the selection of outstanding advertisements to include in an offering to gas companies for use in organizing and presenting institutional publicity.

■ ■

Gas Rate Study Delays Gas For Defiance, Ohio

Natural gas service will not start in Defiance, Ohio, on October 1, as originally expected, due to the fact that the city council has delayed final passage of the rate ordinance proposed by the Toledo Edison Co. until October 15.

S. S. Evans, Toledo Edison manager at Defiance, stated that his company is ready to start pipe line construction as soon as the way is cleared by favorable municipal action.

■ ■

Voluntary Rate Reduction

The North Central Gas Co. has announced a voluntary rate reduction in the district served by the company from Douglas, Wyo., to Lewellen, Neb.

The average saving to householders is estimated at 10 per cent.

■ ■

Sale of Utility Considered

The purchase of the Chattanooga (Tenn.) Gas Co. is being contemplated by the Southern Natural Gas Co., Birmingham, Ala., and the Alabama Water Service Co. Both companies are subsidiaries of the Federal Water Service Corp., New York City.

A.G.A. Exhibit Will Be Featured at Metal Show

LATEST equipment for use by the metal industries will be on display at the 1939 National Metal Congress and Exposition to be held at the International Amphitheater, Chicago, October 23-27. As in previous years, the Industrial Gas Section of the American Gas Association, through its Committee on Displays at National Industrial Expositions, D. W. Chapman, chairman, will sponsor a 5000 sq. ft. cooperative section, to be known as the A.G.A. Combined Industrial Gas Exhibit. Cooperating with the Industrial Gas Section are 11 industrial gas equipment manufacturers and 21 gas companies within a radius of 200 miles of Chicago. Harry Swenson, director of displays, Peoples Gas Light and Coke Co., Chicago, has designed the exhibit's decorative theme and color scheme.

The program will feature the annual Industrial Gas Breakfast, to be held at the Palmer House, Chicago, October 24, at which F. X. Mettenet, vice president, Peoples Gas Light and Coke Co., will speak on gas sales efforts in the metal field.

Concurrently with the National Metal Congress, the fall meeting of the Midwest Industrial Gas Sales Council of the Industrial Gas Section will be held at the Palmer House, October 26. William M. Riach, Jr., Peoples Gas Light and Coke Co., and chairman of the Council, is in charge of the program.

■ ■

Minneapolis Co. Enrolls Large Class at Columbia

During the last two months 41 employes of the Minneapolis Gas Light Co., Minneapolis, Minn., have been enrolled in the course in American Gas Practice offered by University Extension at Columbia University. This course was prepared at the request of and is sponsored by the American Gas Association. It is conducted by correspondence and has been in operation since October 1, 1925. The total number which have been enrolled in it during that time is 1987. A circular describing the course has recently been published. This circular or other information regarding the course will be gladly furnished by K. B. Boyes, secretary, American Gas Association, 420 Lexington Avenue, New York City; or Prof. J. J. Morgan, Columbia University, in the City of New York.

■ ■

Gas Engineering Course At Brooklyn Polytechnic

A comprehensive course in gas engineering opened at the Brooklyn Polytechnic Institute on September 21 and will run until next May.

Edward C. Uhlig, chief chemist and educational vice president of the Gas Club of the Brooklyn Union Gas Co., Brooklyn, N.Y., is accepting enrollments from company employes. This year's class will be the thirteenth to take the course. In the past 12 years 283 employes of the Brooklyn Union Co. have completed the course.

■ ■

Ann Arbor, Mich., Is Now Served With Texas Gas

The changeover from manufactured to natural gas in Ann Arbor, Mich., was completed in August when the final connections were made near Milan with the Texas and Kansas pipe line that runs to Detroit.

The Ann Arbor district is the first of 16 districts in which similar changeovers are to be made. All are expected to be completed by the middle of October.

NO RED INK

in gas plants using PROPANE or BUTANE

During the past two years, more than 15 water-gas and coal-gas plants have been converted to Butane-air or Propane-air operation—resulting in decreased production costs, increased profits and an enhancement in property value.

Butane and Propane offer these advantages:

1. Low plant investment
2. Automatic operation
3. Minimum labor costs
4. Low power costs
5. Flexibility for peak loads
6. Low cost for additional capacity
7. 100% efficient cold carburetion
8. Improved customer satisfaction
9. Possibility of load-building rates

Why pass up these savings any longer? Your inquiry will not obligate you in any way, and Philgas engineers will gladly give you the benefit of their wide experience in this field.

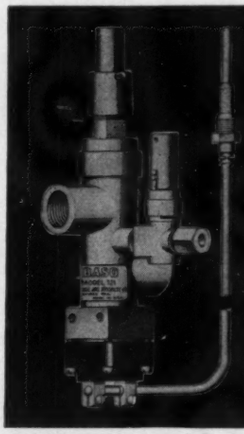
Philgas
DEPARTMENT
PHILLIPS PETROLEUM COMPANY
GENERAL MOTORS BUILDING
DETROIT, MICHIGAN

NEW YORK
PHILADELPHIA
CHICAGO

BARTLESVILLE, OKLA.

MILWAUKEE
ST. LOUIS
AMARILLO

NATION'S LARGEST MARKETER OF LIQUEFIED PETROLEUM GASES



MODEL BASO 721
ONE UNIT
FLOOR FURNACE CONTROL
COMBINES
BASO, BURNER VALVE, PILOT VALVE
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Gas Utility Standings In Annual Safety Contest

THE twelfth annual safety contest among public utility companies for the year 1938-1939, sponsored by the National Safety Council, Inc., found 163 companies participating. The number of employes affected was 162,727, and they worked 332,867,928 hours during the year. The frequency rate for all contestants was 8.784, with the combination gas and electric companies having the lowest frequency rate of 7.473. Frequency rates averaged 13 per cent lower than in the competition of the previous year. On the whole, the largest companies had the lowest frequency rates.

Thirteen companies went through the contest without a single disabling injury.

Contest periods prevail only during the first six months of each year. An analysis of figures covering the 11 years the contest has been held reveal that while the number of man-hours worked in 1939 was 333 per cent more than those of 1928, the number of disabling injuries was but 50 per cent more, indicating the tremendous value that improved methods have brought. During this same period the average frequency has dropped from 19.575 to the 8.784 as stated above. The number of employes per injury has risen in the same period from 37 to 56, and the number of units participating has increased from 113 to 163.

Leading companies in the various divisions will be awarded trophies and those coming second and third will receive certificates during the National Safety Congress to be held in Atlantic City Oct. 16-20.

FINAL STANDINGS IN THE PUBLIC UTILITIES TWELFTH ANNUAL SAFETY CONTEST

July 1, 1938, to June 30, 1939

Combination Gas and Electric Division

Final Rank	*Unit*	*Man-Hours Worked*	*Disabling Injuries*	*Frequency Rate*
Total		130,745,479	977	7.473
	Group A (Units averaging 200,001 or more man-hours per month during first six months)			
1.	Virginia Electric and Power Co., Richmond, Va.	3,997,997	5	1.251
2.	Wisconsin Public Service Corp., Milwaukee, Wis.	3,241,200	11	3.394
3.	Pennsylvania Power & Light Co., Allentown, Pa.	11,025,116	39	3.537
	Group B (Units averaging 80,001 to 200,000 man-hours per month during first six months)			
1.	Iowa-Nebraska Light and Power Co., Lincoln, Neb.	2,213,712	6	2.710
2.	Central Illinois Light Co., Peoria, Ill.	2,189,705	9	4.110
3.	Pennsylvania Edison Co., Altoona, Pa.	1,527,577	7	4.582
	Group C (Units averaging 6,000 to 80,000 man-hours per month during first six months)			
1.	Oklahoma Power and Water Co., Sand Springs, Okla.	284,849	0	0
2.	Moncton Electricity and Gas Co., Ltd., Moncton, N. B., Canada	109,438	0	0
3.	Athol Gas and Electric Co., Athol, Mass.	100,601	0	0
	Gas Division			
Total		77,025,481	799	10.373
	Group A (Units averaging 200,001 or more man-hours per month during first six months)			
1.	Columbia Engineering Corp., Columbus Group	6,126,040	9	1.469
2.	Hope Natural Gas Co., Pittsburgh, Pa.	3,543,072	13	3.669
3.	The Brooklyn Union Gas Co., Brooklyn, New York	8,724,024	50	5.731
	Group B (Units averaging 65,001 to 200,000 man-hours per month during first six months)			
1.	The Dallas Gas Co., Dallas, Texas	1,117,721	2	1.789
2.	The St. Louis County Gas Co., St. Louis, Missouri	854,798	3	2.340
3.	Manila Gas Corp., Manila, P. I.	1,389,484	4	2.879
	Group C (Units averaging 6,000 to 65,000 man-hours per month during first six months)			
Total		8,208,375	104	12.670
1.	The Asheville Gas Co., Asheville, N. C.	107,724	0	0
2.	Peoples Gas Co., Glassboro, N. J.	284,501	1	3.515
3.	Southern Indiana Gas and Electric Co., Evansville, Ind.	247,133	1	4.046

NOTE: All units shown as No. 1 will receive a bronze trophy; all units shown as No. 2 and No. 3 will receive certificates. Awards will be made at the Congress in Atlantic City, October 16-20.

Gas Meters Association Holds Annual Meeting

The Gas Meters Association of Florida and South Georgia held a sales meeting on September 22 at the Haven hotel, Winter Haven, Fla. It was primarily a sales training school for gas company salesmen, and the program included promotional talks and sales presentations on gas ranges, water heaters and refrigerators. Also, there was an all-day cooking demonstration of hotel and restaurant equipment for commercial gas salesmen.

The Meters Association is composed of representatives of manufactured gas companies in Florida and South Georgia, and it meets annually to discuss sales, distribution and manufacturing problems.

John L. Ryan, With Texas Gas For 12 Years, Dies In Tulsa

John L. Ryan, 65, for the past 12 years general superintendent of distribution of the West Texas Gas Co. at Lubbock, Texas, died August 12 at Tulsa, Okla., after two months of illness.

Mr. Ryan was formerly employed by the Iroquoi Gas Co. at Salamanca, N. Y. He left there in 1919 to become traveling auditor for the Oklahoma Natural Gas Co., at Tulsa, where he remained until 1927 when he became associated with the West Texas Gas Co.

Natchitoches-Joaquin Line Uses 200,000 Feet of Pipe

Pipe line equipment representing an investment of $165,000 went into the pipe line built by the Apex Gas Co., between Natchitoches, La., and Joaquin, Texas, construction of which has been completed recently. More than 200,000 feet of 6-in. pipe, weighing about 1500 tons, were used.

The construction work was handled by William Bros. Corp., Tulsa, Okla.

A.G.A.E.M. Reports Lead In Range, Water Heater Sales

FACTS recently issued by the Statistical Department of the Association of Gas Appliance and Equipment Manufacturers reveal that gas water heaters and ranges have outsold these same electric appliances by wide margins during the first six months of 1939.

Of combined gas and electric water heater sales of 273,100 units for this period, gas accounted for 82.9 per cent and electric for 17.1 per cent. The percentage of increase for the first six months over 1938 was 21.9.

A comparison of combined gas and electric range sales for the first six months of 1939 showed that of the 830,404 units shipped, gas accounted for 79.4 per cent and electric for 20.6 per cent. The gain during the same period was 36.7 per cent.

Domestic gas customers served registered a 2.0 per cent increase for June, 1939, as compared with June, 1938. The average number of gas customers served for the first six months of 1939 was 16.08 millions as compared with 15.50 millions for the corresponding period of 1938.

New residential building permits from January through June, 1939, averaged a 46.8 per cent gain.

■ ■

Equitable Gas Co. Promotes Commercial Gas Sales

In order to give special sales attention to commercial load, the Equitable Gas Co., Pittsburgh, Pa., last February formed a commercial sales department. At the present time there are approximately 15,000 commercial customers on the company lines, from whom the utility derives a total annual revenue of $1,240,000.

It is this department's responsibility to protect present load from competing fuels, and make an effort to increase the commercial load and revenue. Also under this department is the work of contacting municipal agencies and affiliated company departments. A staff of eight salesmen and two supervisors is maintained to call on commercial customers.

■ ■

Recycling Plant in Texas Announced by Big Concerns

Contracts have been signed for the erection of a new recycling plant in the Grapeland gas-distillate area of Houston County, Texas.

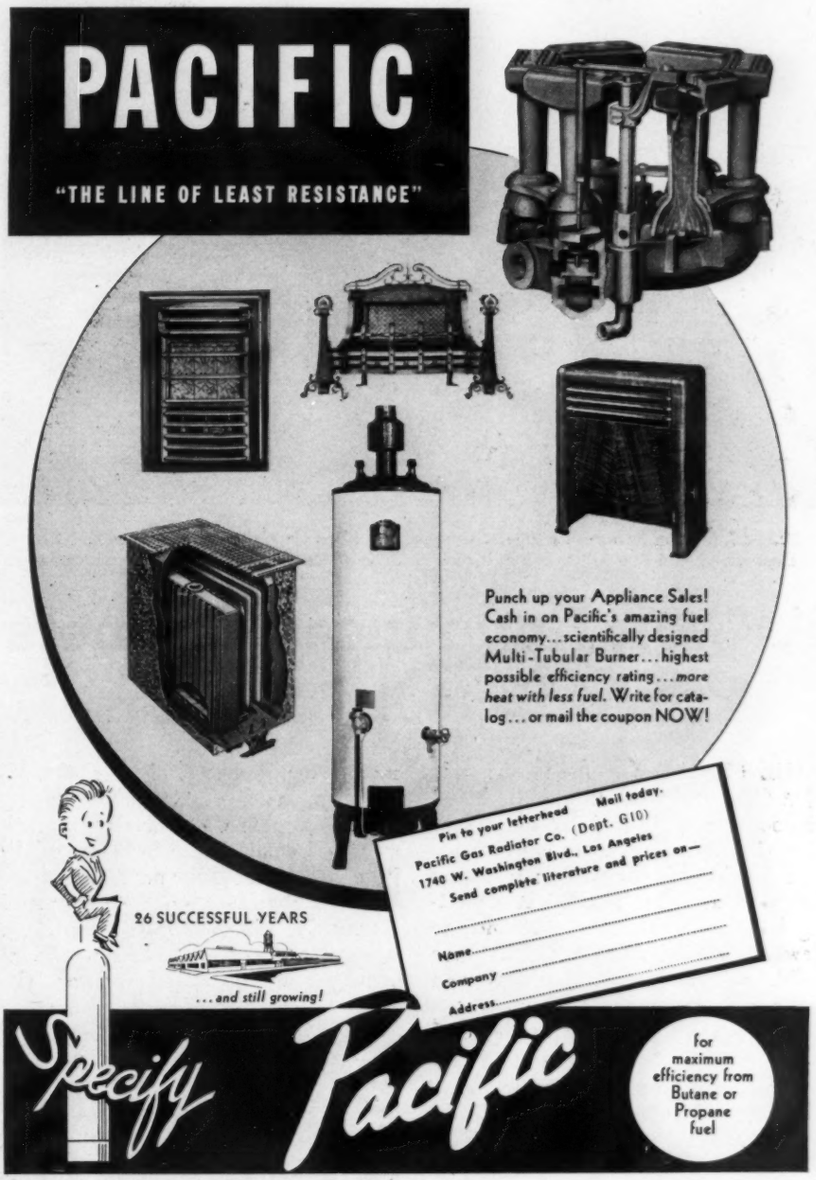
In the deal the Sun Oil Co., Cities Service Oil Co., and Sinclair Prairie Oil Co. transferred to Lone Star Gas Corp. and Trinity Gas Corp. the upper gas rights on the major portion of their acreage on the deep gas structure.

It is expected that the plant will be able to handle 20,000,000 cu. ft. of gas daily, and the probable cost will be upwards of $300,000.

■ ■

Oklahoma Natural Makes Improvements In Ardmore

Improvements costing approximately $25,000 are soon to be made in the Ardmore, Okla., gas system by the Oklahoma Natural Gas Co., Tulsa, Okla. George W. Brinkley, local district manager, has stated that the program would include the rebuilding of 11 district regulator stations and the installation of control equipment to regulate pressure at each consumer's home. Provision is also being made for equipment to control fluctuations of the gas being delivered.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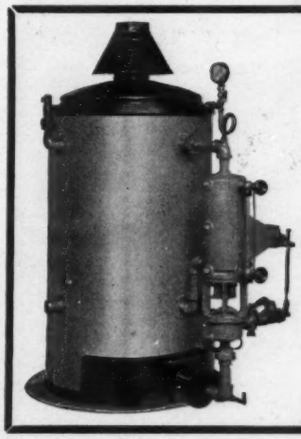


INDUSTRIAL GAS BOILERS

Plain tubular . . . . . ¾ to 10 H.P.
Water Leg tubular . . 5 to 45 H.P.
HE Flueless . . . . . 1 to 18 H.P.

ASME Code for 100 lbs. S.W.P., also for higher pressures.
Non-electric Low Water Cut-offs for all types of boilers.

P. M. Lattner Mfg. Company
CEDAR RAPIDS IOWA

Harold J. Bissner, Pasadena architect, designed this Altadena (Calif.) all-gas home and was awarded one of five $1000 prizes in the A. G. A. All-Gas Home Builders' competition.

A. G. A. Announces Winners In Architects Contest

THE 15 winners of the nation-wide A.G.A. All-Gas Home Builders' Competition sponsored by the American Gas Association in cooperation with the *Architectural Forum* Magazine were awarded $10,000 at a meeting held at the Hotel Ambassador in New York City, August 22-24. Five well-known architects, builders and realtors from various parts of the country were the judges in the contest.

The competition was open to builders and architects who had built or modernized homes using GAS FOR THE 4 BIG JOBS of cooking, water heating, refrigeration and house heating during the period from July 31, 1937, to July 31, 1939, and attracted more than 2000 registrants of outstanding architects and builders representing all parts of the United States and Canada.

The contest was part of the program sponsored by the gas industry of America who recognized the fact that a revival of building will result in the construction and modernization of hundreds of thousands of homes and that these homes afford a market for automatic gas cooking and refrigeration, automatic gas water heating, house heating or conditioning of other gas appliances. The program has been actively promoted by the gas utility industry through its 1500 gas companies serving a population of over 80,000,000 through some 17,000,000 meters.

The program was officially concluded at a formal dinner in honor of the jury held in the Trianon Room at the Hotel Ambassador on the evening of August 24, 1939, at which Conrad N. Lauer, president of A.G.A., was guest of honor and principal speaker. The dinner was attended by executives of the gas industry and the architectural and building professions.

Two Portland (Ore.) builders, J. Wayland Owen, winner of a $500 award; Paul F. Murphy of Murphy & Dean Co., winner of a $1000 cash prize, receive their checks from R. G. Barnett, vice president and general manager, Portland Gas & Coke Co.

Members of the jury which judged the contest were: Otto Teegen, director of Department of Architecture of the Beaux Arts Institute of Design and New York World's Fair Board of Design; Hugh Russell, outstanding west coast builder, Seattle, Wash.; George F. Nixon, builder and realtor, Chicago, Ill.; Bernard L. Johnson, Editor of the *American Builder and Building Age* Magazine, and Miles L. Colean, Architectural Supervisor and Assistant Administrator of the Federal Housing Administration, Washington, D. C.

The 15 prize winners, announced by Mr. Colean as chairman of the jury, are as follows:

Winners of $1000 Prizes: Harold J. Bissner, Pasadena, Calif.; Murphy and Dean Co., Portland, Ore.; Oscar A. De Bogdan, Scarsdale, N. Y.; R. W. Bramberg Co., Oak Park, Ill.; J. H. Hughes, Abilene, Texas.

Winners of $500 Prizes: Homer T. Brown, Brookline, Mass.; George W. Long, Rochester, N. Y.; Wells and Merrill, New York, N. Y.; Aubrey St. Clair, Laguna Beach, Calif.; Herbert Lippmann, New York, N. Y.; William F. Breidenbach, Columbus, Ohio; Farmer and Duran, Tulsa, Okla.; Frank Kirkpatrick, Milwaukee, Wis.; R. Stockdale, Los Angeles, Calif.; J. Wayland Owen, Portland, Ore.

The prize winning and other meritorious designs will be on display at the Gas Industries Building at the New York World's Fair.

■ ■

West Virginia Association Convenes This Month

The 21st annual meeting of the Public Utilities Association of West Virginia is to be held this year at the Greenbrier Hotel, White Sulphur Springs, October 6 and 7. Following the business session will be a program on which the following speakers will appear: C. H. Leatham, vice president of Monongahela West Penn Public Service Co., Morgantown, W. Va.; C. E. Lawall, president of West Virginia University; C. W. Kellogg, president, Edison Electric Institute; and A. J. May, chairman, Military Affairs Committee, U. S. House of Representatives. Homer A. Holt, governor of West Virginia, will be the honored guest at the annual dinner.

■ ■

Frank Carpenter, Employe of Kansas City Co., Dies

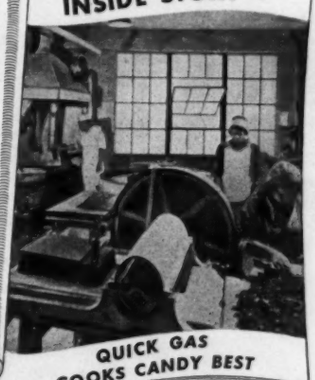
Frank Carpenter, assistant secretary of the Kansas City Gas Co., passed away at his home in Kansas City on August 11. Although but 54 years of age, Mr. Carpenter had been with this firm for 36 years, having started as a collector in 1903. He was born at Marshall, Mo., January 3, 1885.

P.C.G.A. PREVIEW

COOPERATIVE LOAD-BUILDING

"YOU'LL ALWAYS FIND ME 'BEHIND THE SCENES' IN SUCCESSFUL CLEANING PLANTS AND CANDY FACTORIES."

INSIDE STORY—



QUICK GAS COOKS CANDY BEST

Two gas candy furnaces handle all Cora Lou production, with absolutely uniform results. Equipment for chocolate melting is gas-fired as well.

CHOCOLATES, home-made candies, marzipan, brandy-flavored cherries—1,000 lbs. of them, gas-cooked every day. That's the average for Svend Sebbelov's Cora Lou Confectioners, established ten years ago in San Francisco. ☆ "Exact heat, clean and quick," says Sebbelov, "is what we need for varying production. Gas fuel does it perfectly at lowest cost. Temperatures varying from 220 to 320 degrees are secured quickly and accurately with gas." ☆ Ask your Gas Company or Dealer for a demonstration of today's unrivaled candy appliances.

SAN FRANCISCO FAIR VISITORS: See the fascinating, $150,000 Gas Exhibit on Treasure Island located in the Homes and Gardens Palace.

QUICK - CLEAN - CONTROLLABLE - DEPENDABLE - ECONOMICAL

GAS THE MODERN FUEL

FOR CERTIFIED CLEANING FIRST CHOICE, GAS FUEL

Dirt and delay are abolished when an automatic gas boiler supplies steam!

Ira Kaufman knew from experience the advantages of gas fuel, when he opened the *Cadet Cleaners* in Los Angeles last year. A gas-fired boiler was installed as an important unit of the finest available cleaning equipment. Kaufman secured "Good Housekeeping Approval" of a distinctive cleaning service that has drawn phenomenal trade. ☆ Speed up, clean up your plant with gas fuel. Ask your Gas Company about latest methods and equipment. No obligation.

SAN FRANCISCO FAIR VISITORS: See the fascinating, $150,000 Gas Exhibit on Treasure Island, located in the Homes and Gardens Palace.

QUICK - CLEAN - CONTROLLABLE - DEPENDABLE - ECONOMICAL

GAS THE MODERN FUEL

P. C. G. A.
H. L. Farrar, President
Clifford Johnstone, Managing Dir.

OCTOBER 1939

COMMITTEE
A. C. Joy, P. G. & E.
J. S. Spaulding, So. Calif. Gas Co.

INDUSTRY *Personalities*

R. B. Brown, former president of Wilwaukee Gas Light Co., Milwaukee, Wis., returned recently from a 106-day cruise of 8000 miles in his yacht *Ranger*. Mr. Brown and his crew of eight sailed down the Illinois and Mississippi Rivers to the Gulf of Mexico, then to Cuba and Jamaica, and back through the Panama Canal to Mexican ports, and then up the West Coast to Puget Sound, where the voyage ended. **Ed Price,** cook aboard the *Ranger,* has resumed his duties with the Milwaukee Gas Light Co. as street department foreman.

•

F. A. Wright, salesman in the St. Louis territory of Cutler-Hammer, Inc., Milwaukee, Wis., has been appointed manager of resale sales headquarters in Milwaukee. Mr. Wright succeeds **B. M. Horter,** who has been appointed general sales manager.

•

James L. Fly, general counsel of the TVA, has been nominated by President Roosevelt to succeed Frank R. McNinch as a member of the federal communications commission.

•

Frank B. Saunders, controller of the Philadelphia Co., Pittsburgh, Pa., and its subsidiary companies, has recently announced the appointment of **John F. Davis** as assistant controller, and **Crad Brazel** as general auditor. Both officers will make their headquarters in Pittsburgh. Mr. Davis has been with the Philadelphia Co. since 1906, and for the past 11 years has been chief of the statistical division. Mr. Brazel joined the company in 1936 as special accountant, having previously served as auditor of several public utilities.

The Philadelphia Co., Pittsburgh, Pa., has announced that six of its gas utility employes were graduated into the Veteran's Association or the Service Group in August. **Daniel Barton,** Equitable Gas Co., Pittsburgh, has served 30 years, and the following five employes of the Pittsburgh and West Virginia Gas Co., Grafton, W. Va., have served various periods: **Alexander Villers,** 35 years; **Willie A. Morgan,** 30 years; **William Bradley,** 25 years; **William H. Crouser,** 20 years; **Simeon W. Lemley,** 20 years.

•

H. H. Simmons, advertising manager, Crane Co., Chicago, has recently been advanced to advertising and sales promotion manager. Mr. Simmons succeeds **Russell G. Creviston,** who has been appointed director of trade relations.

Personnel changes by Ensign Carburetor Co., Ltd., have been announced recently.

Robert R. Wyker, who has been assistant to the president, will, in addition to his other duties, assume the position of sales manager, making his headquarters at the main office in Huntington Park, Calif. Mr. Wyker has been with the Ensign organization for the past five years. Prior to joining the Ensign organization he was engineer for the Union Metal Co., Los Angeles.

Ralph G. Abbott has been appointed manager of the Dallas branch. He graduated from the University of Michigan in 1930, and previous to his association with the Ensign organization was connected with the engineering staff of the Marvel Carburetor Co. of Flint, Mich., and was sales engineer for Pierce Governor Co., Anderson, Ind.

Roy Mylander, formerly in the Dallas territory on sales work, will be in charge of field service, with headquarters at the factory. His duties will include the compiling of information that will be of help to the users of Ensign equipment every place.

•

Robert J. Canniff, executive in the gas appliance field for the past 18 years, has joined Servel, Inc. as sales promotion manager — gas, it is announced by H. S. Boyle, sales promotion manager of the company. His headquarters will be in Evansville, Ind., where he will assist in promotional activities in the urban field where the Servel Electrolux gas refrigerator is marketed. Mr. Canniff went to Servel from the Ruud Manufacturing Co., Pittsburgh. From 1934 to 1936 he was with the Pittsburg Water Heater Corp., as general sales manager. He was western sales manager for the Standard Gas Equipment Corp., of Chicago, from 1926 to 1934. Mr. Canniff was the first chairman of the water heater division of the Association of Gas Appliance and Equipment Manufacturers, and is a member of the Advisory Council of that body.

•

W. F. Cathcart, formerly connected with the American Gas Association Laboratory in Cleveland, has joined the Robertshaw Thermostat Company as Cleveland representative.

Mr. Cathcart is a graduate of the Case School of Applied Science. His first year after college was spent as a sales engineer with the Continental Rubber Works, after which he joined the staff of the American Gas Association Laboratory, where he worked in the range, water heater, space heater, chemical and research departments.

•

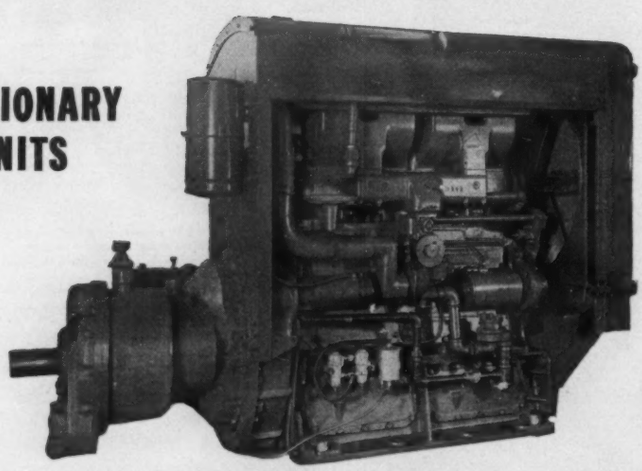
Betty Whipple has been made new home service director in Claremore, Okla., for the Oklahoma Natural Gas Co. She takes the place of **Charlotte Diver**, who has been transferred to Shawnee, Okla. **Jeannette Stearns**, who was formerly at Shawnee, has been transferred to the company's office in Oklahoma City.

•

The "pueblo boys" in Lone Star Gas System's Ranger, Texas, district claim to have set a record in pipe line replacement when they replaced 240 ft. of 4-in. pipe across a salt water flat in one hour from the time the line was shut off. Fifteen minutes were required to blow the line down from 380 lbs. pressure to atmosphere, then the old pipe was replaced by the new, and the line was purged and loaded back for service. Work was supervised by **E. K. Smith,** Ranger district foreman, and **J. A. Jarboe,** assistant foreman.

ENSIGN CARBURETION EQUIPMENT

FOR STATIONARY POWER UNITS



Suitable for use with Natural or Manufactured Gas. ENSIGN Gas and Combination Gas and Gasoline Carburetion Equipment is standard with all leading engine manufacturers.

ENSIGN CARBURETOR CO., LTD.
LOS ANGELES · DALLAS · CHICAGO

Preview of coming campaigns by

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

GAS APPLIANCE SOCIETY OF NORTHERN CALIFORNIA

FALL GAS RANGE CAMPAIGN

After the success of the spring campaign on "CP" gas ranges it was inevitable that we should do a repeat performance in the fall. And here is the result—"Buy your gas range between Qctober 13 and 21 and save $10"—a strong inducement backed by powerful advertising. According to the Gas Appliance Society, media will include newspapers, radio, posters and movie slides. Another feature will be a ribboned "CP" medallion which will tie in newspaper and poster advertising and the range itself. In addition there will be a salesmen's pocket manual of "CP" selling points . . . prizes for outstanding newspaper ads and window displays . . . free publicity stories, and so on. Altogether it is a campaign which should appeal to every real gas range merchandiser in the territory.

G 210-1039

DEALERS: By watching this page from month to month you can keep informed of sales promotional campaigns to be sponsored by the Pacific Gas and Electric Company and the Gas Appliance Society. Detailed information will be supplied, as usual, through the mail. If such information is not received, call our local office or write Gas Appliance Society, 1355 Market Street, San Francisco, California.

A. A. (Andy) Fomilyant, who formerly was in charge of field editorial work for Western Business Papers, Inc., recently became associated with Merco Nordstrom Valve Co. and Pittsburgh Equitable Meter Co., Pittsburgh, Pa., in sales engineering work. Mr. Fomilyant received his engineering education at Cal-Tech. He is in the above company's Los Angeles offices, covering primarily the refinery field. Mr. Fomilyant is serving this year as program committee chairman for the Southern California Meter Association.

•

W. G. Kelley, for 12 years in charge of general accounting and budget work for the Kansas City Gas Co., Kansas City, Mo., has been elected assistant secretary and assistant treasurer of the company, filling the positions created by the recent death of Frank Carpenter. Mr. Kelley has been with the organization since 1917.

•

B. C. Adams, general manager of the Gas Service Co., Kansas City, Mo., has announced the transfer of **Louis L. Roesle,** manager of the Topeka, Kan., branch, to St. Joseph, Mo., where he will manage the company's office in that city. He will be replaced at Topeka by **Fred Karr,** formerly at St. Joseph. Mr. Roesle has been with the Topeka branch since 1931, and Mr. Karr since before 1924.

•

F. J. Rutledge, of the United Gas Improvement Co., Philadelphia, Pa., was recently appointed a member of the Philadelphia Gas Commission. This body was created by an agreement between the City of Philadelphia and the U.G.I. Co. for the operation and regulation of the municipal gas works. At the Commission's organization meeting Mr. Rutledge was named secretary.

•

E. M. Cloran, formerly in the engineering department of the Pittsburgh Equitable Meter Co. and Merco Nordstrom Valve Co. in Pittsburgh, was recently transferred to the company's Los Angeles office. He will handle sales engineering duties, chiefly contacting gas and petroleum departments of Southern California corporations. After graduating from Harvard (28) he became associated with Stone & Webster and later was with Atmospheric Nitrogen Corporation. He is also on the sub-committee on Industrial Instruments and Regulators of A.S.M.E.

•

The appointment of **Edward R. Downe** as chief engineer of The Bryant Heater Co., Cleveland, Ohio, has recently been announced by Bryant's director of research and development, F. R. Higley. Mr. Downe was formerly vice president and chief engineer of The American Gas Products Division of the American Radiator Co.

•

E. O. Buck, with the new business department of the Kansas City office of the Gas Service Co. since June, 1937, has been transferred to the Carrollton, Mo., office of the company to become new business representative there and at Waverly and Norborne, Mo. He will work under the supervision of **Don P. Warner,** who recently became district manager of the Warrenburg and Carrollton group of properties.

•

C. B. Harper has been appointed traveling sales coordinator for United Gas Corp., Houston, Texas, replacing **A. B. Parker,** who has been in charge of dealer sales coordination activities of the Houston gas and fuel division. Mr. Harper was formerly residential sales supervisor for the Beaumont district.

•

Alvin Hurstad, formerly of Grand Junction, Iowa, has been appointed manager at Valley, Neb., for the Peoples Natural Gas Co., taking the place of **T. J. Warner,** who has been transferred to Lake Mills, Iowa.

•

Following the company's policy of placing local men in key positions, President **O. H. Weddle** states that the Missouri Gas and Electric Service Co. has named **E. M. Page,** Marshall, Mo., a company director, to replace **George A. Mills,** of Lawrence, Kan. Mr. Page is also a vice president of the company and district manager at Marshall.

•

The Southern California Gas Co. has recently announced personnel changes in three of its district offices. **Roy T. McFadden,** district agent at San Bernardino, Calif., has been appointed district agent at Riverside to replace C. A. Gillespie, who resigned. **William M. Fisher,** formerly chief clerk at the Hollywood office, has been transferred to the Eastern Division headquarters to replace Mr. McFadden, and **Carl Weiss,** clerk at Compton, has been named chief clerk at Hollywood.

•

John W. Batten, Detroit, vice president and general manager of the Michigan Consolidated Gas Co., has been elected a director of the American Gas Association. He replaces **William G. Woolfolk,** former president of the Michigan Consolidated Gas Co., who recently was named president of the United Light and Power Co., Chicago.

Mr. Batten has been in the employ of the Detroit City Gas Co., now the Michigan Consolidated Gas Co., for the past 33 years. He has been a director of the company since 1923 and a vice president since 1931. He is a former president of the Michigan Gas Association.

•

Thomas L. Kemp, general manager of the Citizens Gas and Coke Utility, Indianapolis, Ind., was recently honored by employes on the fourth anniversary of his service with the company. During Mr. Kemp's four years as manager, the company has improved the gas and pressure, extended its gas mains 162 miles, and lowered rates.

•

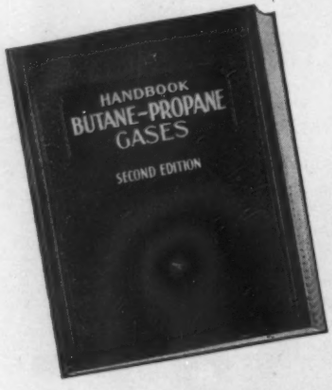
George F. Peck, Jr., formerly Community Natural Gas Co. storekeeper for the Temple, Texas, district, has been appointed manager of the company's Terrell, Texas, district, according to an announcement by L. B. Denning, Jr., vice president and operating manager. Mr. Temple succeeds W. O. Anderson, who resigned.

C. G. Barndt, Brownwood district storekeeper, has been transferred to the Temple district as storekeeper, succeeding Mr. Peck, and **Wesly J. Smith,** commercial collector at Brownwood, succeeds Mr. Barndt as storekeeper at Brownwood.

•

L. E. Southard, formerly assistant foreman for the Joshua, Texas, pipe line district of Lone Star Gas Co., with headquarters at Waxahachie, has been appointed foreman of the Richland pipe line district with headquarters at Groesbeck, Texas. The appointment was announced recently by R. Vandercook, pipe line superintendent for the company. Mr. Southard replaces John I. Pearce. Succeeding Mr. Southard in the Joshua district is **Ocie T. Gibson.**

HANDBOOK BUTANE-PROPANE GASES



415 Pages

CONTENTS: Semi-Bulk Distribution: Use of Butane in Buses: Combination Propane Operated Utility Plant: Use in Internal Combustion Engines: Design & Installation of Storage: Supply from Petroleum Refineries: Engineering Data on the Lower Olefins: Domestic Appliance Testing and Utilization: Economical Comparisons with Coal, Oil, Electricity, Producer Gas, Manufactured Gas: Town Plants: Manufacture from Natural Gas: Special Uses: Volume Correction Factors: Transportation: Use with other Gases: Analysis & Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalog Section.

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The NATIONAL Gas Magazine

OIL & GAS Equipment Review, 810 S. SPRING ST. Los Angeles, Calif.

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YOUR COMMUNITY CHEST IS CALLING

L. D. West has been appointed to the position of supervisory vice president of the Utility Management Corp., New York, according to an announcement by President R. D. Jennison.

Previously Mr. West had been in supervisory charge of new business activities and sales, and he will be succeeded by **H. C. Thuerk** whose new title will be general manager of sales.

•

Mabel Jo Trees, for the past year assistant home service demonstrator for the Lone Star Gas Co. at Fort Worth, Texas, has been selected by the Empire Southern Service Co. to create a similar department at Big Springs, Texas.

•

L. H. Arnold, formerly of Rochester, Minn., has taken over the management of the office of the Peoples Natural Gas Co. at Spirit Lake, Minn., where the laying of new gas mains was started late in September, following a favorable vote for a 25-year franchise on August 24.

•

Charles I. Wall has been appointed general superintendent of city gas plants in Lubbock, Texas, for the West Texas Gas Co., according to an announcement by the company's vice president, **R. F. Hinchey**. Mr. Wall was formerly manager of the company's business at Plainview and had charge of the department of new business for the company's entire system. He succeeds the late **John F. Ryan**, who died early in August. **W. O. Daniels** will occupy Mr. Wall's former position, while **Marion F. Peters** will become district manager, Mr. Daniels' former position. **W. H. Deardorf**, of Clayton, N. M., will succeed Mr. Peters at Plainview, and **L. D. McCurdy**, of Plainview, will go to Clayton to take Mr. Deardorf's former position.

•

Helen Milner, Lansing, Mich., has been engaged as home service director for the Ohio Gas, Light and Coke Co. at Bryan, Ohio. Miss Milner will conduct classes in home service work in other towns served by her company as well as in Bryan.

•

Frances Goodfellow has been appointed home service representative for the Ohio Fuel Gas Co. in the Pataskala, Ohio, district, it has been announced by **H. M. Jay**, district manager.

•

John Leaper has been made manager of the Logan, Ohio, office of the Ohio Fuel Gas Co. and surrounding territory, which includes Union Furnace, Rockbridge and Sugar Grove. Mr. Leaper was for 20 years with the same company at Middleport, Ohio.

•

W. A. Robinson, formerly of Ranger, Texas, and associated with the Lone Star Gas Co. for 10 years, has been appointed superintendent of the company's gasoline plant at Trinidad, Texas. He succeeds **John M. Kindle**, who designed and built the Trinidad plant and who now is placed at the head of the company's plants in West Texas, with headquarters at Ranger.

•

J. Lester Auer became new business representative for the Gas Service Co., in El Dorado, Kan., on August 14, assuming the duties of **Harland L. Fuller** who was transferred to Falls City, Neb., there to continue the same field of activity for the company.

Mr. Auer has been associated with the El Dorado National Bank for 15 years prior to this time.

•

Daniel Fitzpatrick, in the employ of the St. Augustine Gas Co., St. Augustine, Fla., an even half century, has retired, his last office being that of general manager.

He was recently honored by officials and other employes of the company with a banquet.

•

S. M. Vance has recently been appointed to the office of sales manager of gas equipment in the heating sales section of the General Electric air conditioning and commercial refrigeration department, having been advanced from assistant manager of gas equipment sales. **C. E. Forest** will be assistant to Mr. Vance.

•

Louis L. Roesle, for 10 years with the Gas Service Co. in Topeka, Kan., and lately manager there for that concern, has been transferred to St. Joseph, Mo. **Fred Karr**, formerly in St. Joseph, has taken Mr. Roesle's place in Topeka. The announcement of the changes, effective October 1, was made by **B. C. Adams**, head of the Gas Service organization.

•

E. F. Kellner, for the past four years Pinal County supervisor, has been appointed manager of the Natural Gas Service Co. at Coolidge, Ariz. He takes the place of **Karl Payne**, who recently resigned to move to the Pacific Coast.

•

A. B. Macbeth has been appointed a director of Pacific Lighting Corp. He recently retired as president and general manager of Southern California Gas Co., a subsidiary of Pacific Lighting Corp.

•

Jean McCullough has received an appointment as home service representative of the Ohio Fuel Gas Co. for Elyria and Vermilion, Ohio.

•

Mrs. Pearl Putnam, cashier for the Oklahoma Natural Gas Co. at El Reno, Okla. for the past 12 years, was transferred to the Oklahoma City office of the company on September 1.

•

Charley Lockhart, Jr., son of the state treasurer of Texas, has been appointed dealer sales supervisor for the Community Natural Gas Co. at Abilene, according to an announcement by **M. Lacy Bird**, division superintendent.

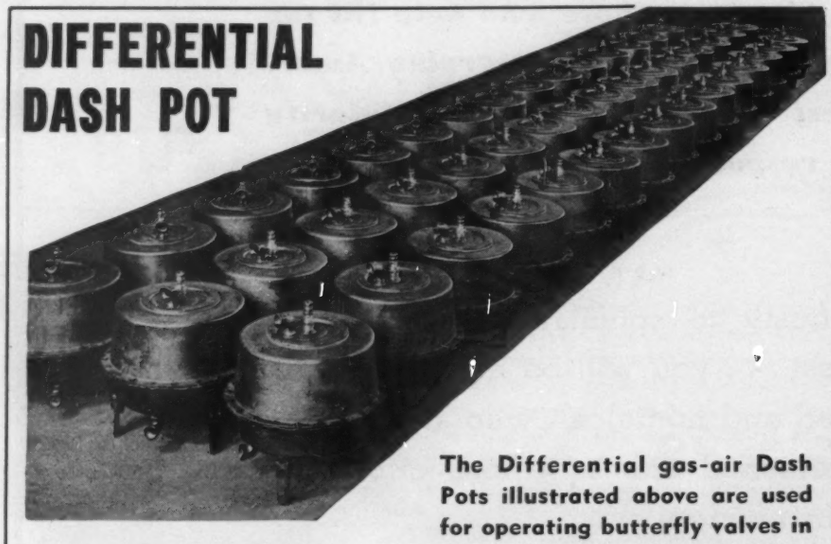
■ ■

P.C.G.A. To Issue Complete Paper on Dehydration

"The Partial Dehydration of High Pressure Natural Gas," an extensive and original research by B. M. Laulhere and C. F. Briscoe of the Southern California Gas Co., Los Angeles, will soon be published in its complete form in Vol. 30 of the *Proceedings*, Pacific Coast Gas Association. Copies of this volume will be available to the industry through the P.C.G.A. headquarters, 447 Sutter Street, San Francisco.

GAS, in publishing portions of this paper in its September, 1939, issue, neglected to state that this work as published was considerably abstracted. In justice to its authors, *GAS* wishes to correct the impression that the paper was published in its entirety.

DIFFERENTIAL DASH POT



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Department Stores Included In Edison Co.'s Sales Plans

EIGHT of the leading department stores in Consolidated Edison System territory were recently accepted as participating cooperating department stores under the System's cooperative appliance promotion plan for the sale of standard gas appliances, according to an announcement by E. F. Jeffe, vice president, Consolidated Edison Co. of New York, Inc.

The System's merchandising plan will now include department stores on a basis comparable to that enjoyed by individual cooperating appliance dealers and they will share in the allotment of orders taken by the utility companies' employes. Any department store in the territory with an appliance department which carries a diversified stock of standard appliances and conforms with the other requirements for approved dealers may become an approved dealer under the company's promotional plan. According to Mr. Jeffe, inclusion of the department stores is expected to produce a more widespread presentation of standard approved appliances with consequent increase in sales.

■ ■

Pyramid Equipment & Sales Co. Formed By G. Woodill

Formation of the Pyramid Equipment & Sales Co. is announced by Gilbert Woodill, to manufacture and sell carburetors and fuel regulators for the use of natural gas in power units and stationary engines. These same carburetors and a combination vaporizer and fuel regulator for the use of liquefied petroleum gas (butane-propane) are also available for such engines.

Mr. Woodill is president and general manager and Karl Westlund is vice president and chief engineer of the company. Both men were associated with the Ensign Carburetor Co. for approximately 10 years, and are well-known in the industry.

The Pyramid Equipment & Sales Co. is located at 2305 East Eighth Street, in Los Angeles.

■ ■

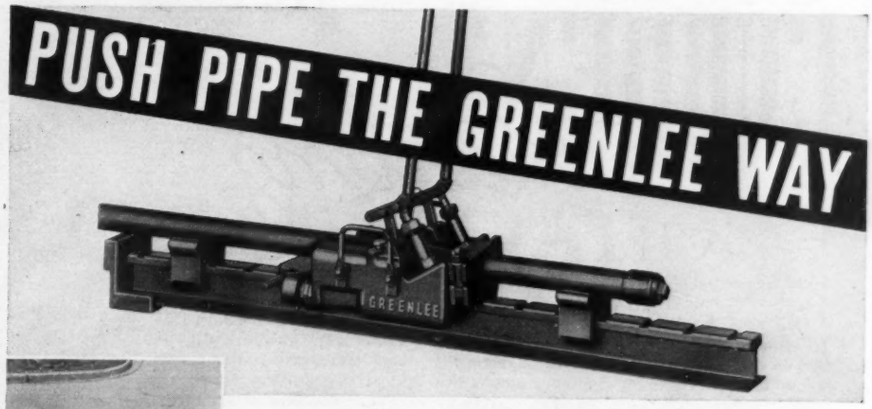
E. M. Cloran Presents Paper At Meter Association

E. M. Cloran, engineer, Pittsburgh Equitable Meter Co., Los Angeles, presented a paper, "Rotary Oil Meters of the Positive Displacement and Current Types," illustrating it with slides and charts, at the September meeting of the Southern California Meter Association, held September 28 in Huntington Park, Calif. This paper was previously delivered by Mr. Cloran before the A.S.M.E. On the same program was "A Tour of South America," a moving picture shown through the courtesy of American Airlines. George Forster of the Texas Co. and president of the Association, conducted the meeting. The program was arranged by Anatole Fomilyant, program chairman.

■ ■

Mid-West Gas School To Be Held at Ames in November

The 19th annual Mid-West Gas School and Conference, conducted by the Midwest Gas Association and Engineering Extension Service of Iowa State College, will be held November 13-15 at Iowa State College, Ames, Iowa. This year the program includes three half-day sessions of school and actual shop work on the various new types of range, heating and refrigeration controls, in addition to discussions on gas distribution, metering, utilization and production.



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CURRENT Reading

Oil and Gas Transportation Review—*Petroleum Engineer*, Midyear 1939. In the field of transportation the annual engineering review of the Petroleum Engineer covers the subject by the following articles: Advancement and trends in pipe line construction, maintenance, and operation, by Frank H. Love; Recent progress in natural gas transportation, by Roy W. Parker; Welded pipe line construction features greater use of "stove-pipe" method, by A. F. Davis; Developments in procedure for installing cathodic protection to pipe-lines, by Walter F. Rogers.

Control Problems as Affected by Regulatory Design—A. J. Foley, Hanlon-Waters, Inc., Tulsa, Okla.

Sampling Petroleum Hydrocarbons—R. L. Huntington. *Oil Weekly*, July 17, 1939, pp. 24, 26, 28. Part 1—Sampling gases under low pressure. The importance of the proper sampling of petroleum hydrocarbons (both liquids and gases) is being realized by the more progressive laboratories today. In this article, the art of sampling gases and liquids at low pressures is discussed. Precautionary measures in shipping the samples and transferring them into the laboratory apparatus are also mentioned. Part 2—Gases, vapors and liquids under high pressure. July 24 issue.

Acidation of Gas Wells in the Texas Panhandle—D. H. Stormont, Staff Member, *Oil and Gas Journal*, Tulsa, Okla.

Control Practices in Processing Natural Gas—Henry N. Wade. *Refiner*, June 1939, pp. 248-251. The purpose of this paper is to give a short review of current practice in the application of automatic controls to various natural gas processing operations.

Creating Industries, 1919 - 1939—Natural Gas—James B. Garner. *Chemical Industries*, June 1939, pp. 624-632. The development of the natural gas industry and its utilization as a raw material for the synthesis of hundreds of important chemicals constitutes one of the most romantic pages in the industrial history of the United States. Author, Senior Fellow of Mellon Institute, in charge of investigations in the chemistry and technology of natural gas, reviews first the early historical background, then discusses the chemical composition of natural gas and presents pertinent information on the major day uses. In addition, he supplies considerable pertinent statistical data on natural gas, carbon black, L. P. gases, etc.

Protection from Dangerous Gases in Oil Tanks—A. W. Cox. *Jour. Inst. Petr.*, July 1939, pp. 416-425. Discussion of: Dangers of empty tanks; explosive and inflammable limits; home office regulations; cleaning and vapor-freeing tanks; treatment for various products; testing for inflammable vapor; taking of samples; electric testing methods; flame testing methods; potential sources of vapor; removal of water and residue; precautions in vapor-testing work.

Sulfur in the Products of Combustion of Fuels—L. R. Burdick and J. F. Barkley. Bureau of Mines, I. C. 7065.

Fundamental Considerations of Recycling in Condensate Production—Emby Kaye. *Petroleum Engineer*, Aug. 1939, pp. 29-32. Recycling or pressure maintenance as a means of producing distillate or condensate from gas-distillate pools is by no means an exact science, each well being an individual case, but there are a few fundamental features common to all such activity which should be well in mind. Recycling gas-distillate pools not only is conservation par excellence but should be made compulsory by public regulatory bodies for the sake of natural resource conservation.

River Crossing for Pipe Line Introduces New Problems. *Oil and Gas Jour.*, Aug. 3, 1939, pp. 40-42. When a pipe line has to cross a river, particularly when that river is as heavily trafficked as the Schuylkill at Philadelphia, some interesting engineering problems are encountered. How these problems were met is described in this article about Atlantic's new line.

Efficient Operation and Maintenance of Gas Compressor Stations—W. E. Nestor. *Petroleum Engineer*, Aug. 1939, pp. 67, 68, 70. An outline of the methods followed by the Arkansas-Louisiana Gas Co. in its overhaul and repair work that resulted in reduced operating and maintenance costs.

Operation of Cathodic Protection Units on High-Pressure Gas Lines—Dave Harrell. *Petroleum Engineer*, Aug. 1939, pp. 88, 90, 92. The Houston Pipe Line Co. has been applying cathodic protection to its pipe lines since 1934 and has developed several successful systems. The most outstanding of these is a gas engine driven unit that has been in operation since 1935 and is still operating satisfactorily. During this period it has operated 97 per cent of the time and has successfully protected a one-mile section of 16-in. pipe that has such a bad coating that it could almost be considered bare line. In total, the following types of units are in operation on the company's system, each of which is described briefly: (1) rectifier unit from main power line; (2) motor-generator set; (3) gas engine driven generator; (4) wind-powered unit using storage battery; (5) rotary gas driven engine driving generator.

Hot Water Heater for Preventing Freeze-Offs of Large-Volume Gas Well—Roy W. Parker. *Petroleum Engineer*, Aug. 1939, pp. 109, 110. In an attempt to eliminate the fire hazard that exists in open-flame burning that often causes pipe to burn and rup-

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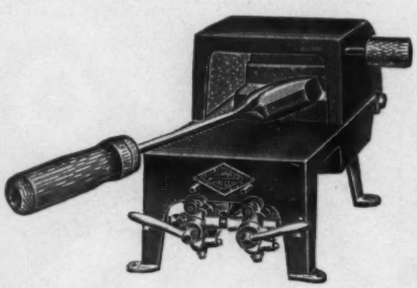

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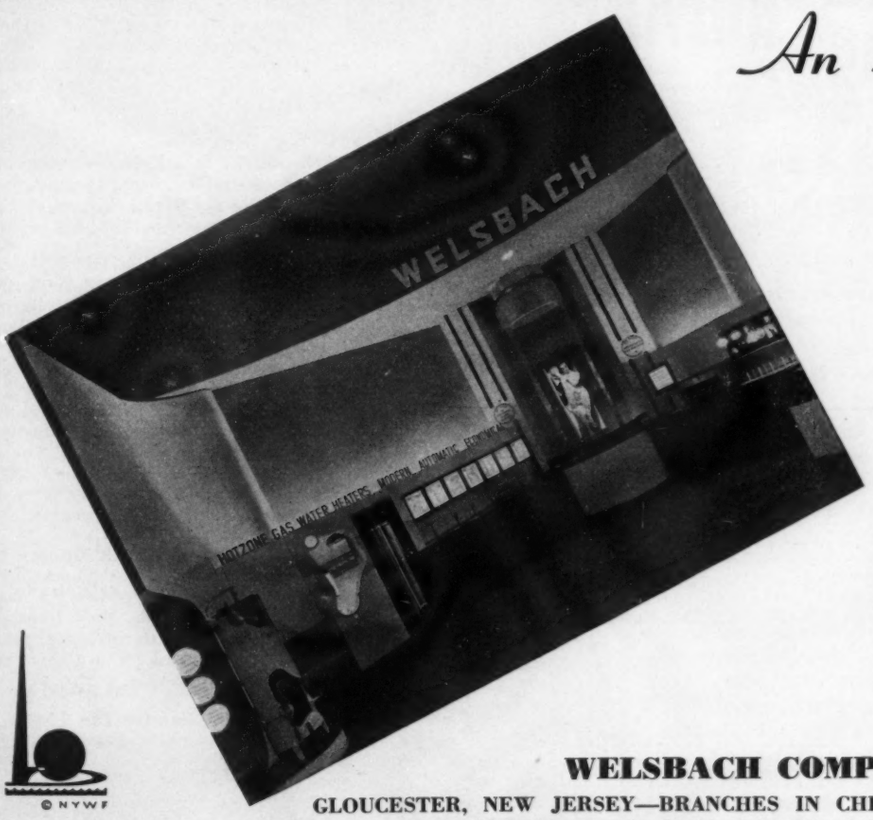

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Zinc for Cathodic Protection of Pipe—Wm. Thompson Smith and Thomas C. Marshall. *Gas Age*, Aug. 17, 1939, pp. 15-18, 35, 36. The use of zinc for cathodic protection of pipe lines has to a large degree been unsuccessful due to faulty instigation but recent well-planned programs using it have resulted in seemingly thorough and rapid results. Complete discussion of its proper use is given.

Phase Behavior of the Methane-n-Pentane System—H. S. Taylor, G. W. Wald, B. H. Sage, and W. N. Lacey. *Oil and Gas Jour.*, Aug. 10, 1939, pp. 46, 48, 50. The practice of producing petroleum gases at high pressures and under retrograde condensation conditions has recently prompted a thorough investigation of the state of the hydrocarbons under various conditions which make up these gases. Laboratory investigation of the phase relationship or the determination whether the material exists as a gas or a liquid when present as a mixture under specified temperature and pressure conditions has intense practical value at present. In this article the authors present the results of conclusive work undertaken using a mixture of methane and normal heptane as the hydrocarbons. The phase behavior of the mixture was studied through a temperature range of 100° to 220° F. and results are shown.

An Automatic Recorder for Inflammable Gases—H. Lloyd. *Jour. Inst. Petr.*, July 1939, pp. 435-439. This paper describes the principles and design of an instrument which may be used in connection with protective measures against risks of fire and explosion, not only in coal mines but also elsewhere, which may take the form of special ventilation to prevent the accumulation of sufficient concentration of inflammable gas to be a source of danger, or, on the other hand, with steps which may be taken to eliminate any possibility of the occurrence of exposed flames or sparks which could ignite any inflammable mixture in the atmosphere. The paper also goes on to suggest some of the ways in which it might be applied in fields other than that for which it was originally developed.

The "Riken" Explosive Gas Indicator—J. S. Jackson. *Jour. Inst. Petr.*, July 1939, pp. 456-458. A method of analyzing mixtures of methane and air based on the fact that the refractive index of methane is considerably higher than that of air was described in Bulletin 42 of the U. S. Bureau of Mines, 1913. The "Riken" Explosive Gas Indicator, designed and described by Dr. Z. Tuzi, is based on this principle and incorporates the Doi refractometer, which is similar in principle to the Jamin interferometer. This instrument is described.

The Inflammation of Hydrocarbon-Air Mixtures—D. T. A. Townend and M. Maccormac. *Jour Inst. Petr.*, July 1939, pp. 459-486. This paper particularly directs attention to (a) the part played by pressure in inducing the spontaneous ignition of certain combustible-air mixtures at comparatively low temperatures by the incidence of the phenomenon known as a "cool" flame, and (b) the part played by both temperature and pressure in widening the ranges of inflammability of many combustibles, and particularly in inducing separate ranges for "cool" flames which may be initiated by suitable igniting sources. Until recently the origin and independent behavior of a "cool" flame were not well understood; but it is now recognized as playing an important role under suitable conditions in the ignition of many inflammable materials.

Hydrogen Sulfide Removed by Tri-Potassium Phosphate—H. N. La Croix and L. J. Coulthurst. *National Petroleum News*, Aug. 9, 1939, pp. 326, 327, 329, 330, 332. Hydrogen sulfide removal from gaseous or liquid hydrocarbons is accomplished by contact with aqueous solutions of tri-potassium phosphate. Reactions are similar to the caustic soda process but differ radically in that complete and continuous regeneration of solution is accomplished with negligible loss of solution.

Dehydration of Natural Gas by Silica Gel—H. de Raay. *Petroleum Engineer*, Aug. 1939, pp. 45, 48. In the Mene Grande field, Venezuela, a silica gel plant for the dehydration of natural gas has been in successful operation for many years. The plant consists of three absorbers and one heater. The principle of operation is analogous to that of a charcoal absorption plant in that one of the three absorbers is employed to absorb the water, while another is being dried by heated dry gas, and the third is being cooled by cold dry gas.

P. G. and E. Is a Private Utility and a Good One—*Fortune*, Sept., 15 pages, illustrated. A $700,000,000 case history of California water power and politics that begin at the water's edge.

The Gas Industry — Oldest Utility Gains New Vitality—*The Index*, published by the New York Trust Co. The survey shows that the gas industry, serving a total of 17,135,000 customers, or about 60 per cent of the nation's homes, represents a total investment in plants and equipment of almost $5,000,000,000. Total sales of the industry in 1938 are estimated at $786,576,000. The gas industry, the *Index* states, as other forms of private enterprise in the United States, has used its competition to foster progress.

Cooking Perfection With Modern Gas Ranges—Produced by A.G.A. Committee on National Advertising and revised by Ward-Schopps Co., Grand Rapids, Mich. Illustrated booklet containing 101 recipes and menus. Copies may be obtained for five cents each from the Ward-Schopps Co.

Gas Kitchen Calendar for 1940—De-Vinne-Brown Corp., New York, price four cents each. Designed to hang on the kitchen wall, this calendar has been illustrated to bring out the functional uses of modern gas appliances. On the back of each page will appear seasonable recipes.

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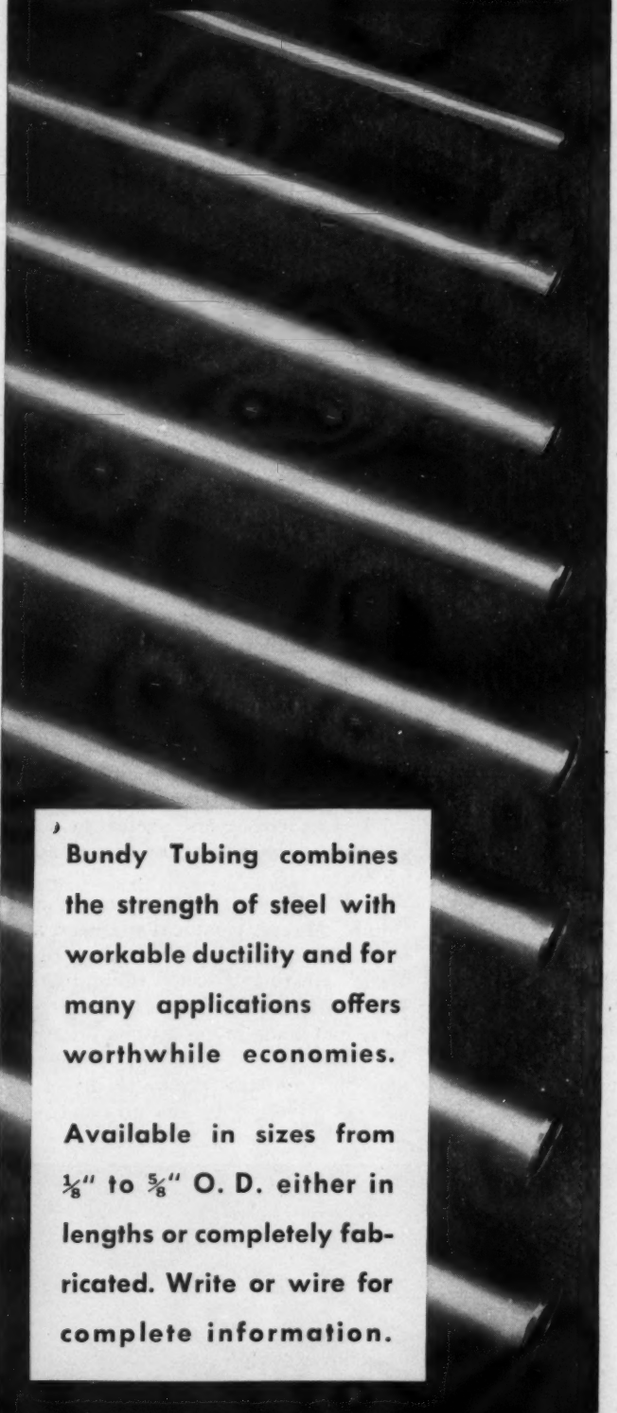

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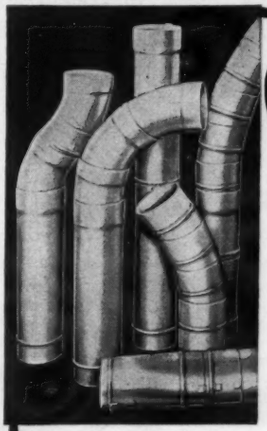

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Gas Division Convention Held by Oklahoma Group

By O. D. HALL

ONE hundred and thirty-eight delegates, representing 23 natural gas utility companies operating in Oklahoma, Texas, Missouri and Illinois, attended the convention of the Gas Division, Oklahoma Utilities Association, at the Biltmore Hotel, Oklahoma City, Okla., September 14. W. L. Woodward, president, Zenith Gas System, Inc., Alva, Okla., presided over all the sessions.

The meeting opened with the reading by L. D. Black, Lone Star Gas Co., Ennis, Texas, of his paper, "Duties of a District Manager," which was awarded the first prize by the American Gas Association, in a recent competition.

Mr. Black declared that to be successful, a district manager must be a combination of public contact man, personnel manager, sales supervisor, operation superintendent, a better than average accountant, and a credit manager. He also should cooperate and lead in any worthy community enterprise, and keep informed on business conditions and the mass thought movements in each of the towns in his territory.

"Dealer Aids in Promoting Gas Sales," was the subject presented by F. M. Rosenkrans, Gas Service Co., Kansas City, Mo. He described a new dealer-aid financing plan his company recently introduced into Oklahoma.

Mr. Rosenkrans explained that his company utilizes money of local banks for aiding dealers in gas appliance financing. The utility takes the dealer's paper, financed up to three years, bearing five per cent interest, and secured by a mortgage on the appliance. The gas utility does not assume the loss for bad paper but guarantees the bank against losses. It does, however, carefully investigate the credit of appliance customers. The dealer is not required to collect a down payment but must collect the sales tax.

E. C. McAninch, chemist, Oklahoma Natural Gas Co., Tulsa, explained, with the help of slides, the "Application of Temperature and Velocity Boosters," to the company's low-pressure natural gas distribution system at El Reno, Okla. That city was chosen for the experiment because of the sudden, unpredictable industrial demand and the comparatively high percentage of leakage. He said that the installations had brought about a great improvement in regulation to pressures to meet the demand and in reduction of leakage in the distribution system.

The housewife sometimes increases her gas bill and lowers the efficiency of her furnace heating system by placing furniture, rugs, pianos, or long heavy draperies over grill openings, declared Carl Dean, Oklahoma Natural Gas Co., in a paper on, "High Bill Complaints." Other causes of high bills and poor performances of furnace installations are, covering grills with fine screen to "keep baby from dropping the family silverware into the opening"; poorly engineered and improperly installed warm air heating installations, and failure to close attic fan openings during the winter.

"The settlement of high bill complaints is the finest opportunity offered the utility employe to build up his company's greatest asset, company good will," Mr. Dean declared. "The customer will be greatly pleased to find a utility employe who will make an intelligent effort to determine the cause of the complaint."

"The servicing of appliances is a highly important branch of the many services that a public utility can offer its consumers," declared E. A. Bartolina, Consolidated Gas Utilities Corp., Blackwell, Okla. He summarized the value of servicing appliances as follows:

"1. Properly adjusted gas appliances produce the very best public relations and good will.

"2. Properly adjusted appliances promote increased usage of gas and guarantee the continued use of the gas being consumed at the present time.

"3. Gas companies, particularly in Oklahoma, are the best qualified agencies to render appliance servicing.

"4. Gas customers prefer to have gas companies render appliance service."

R. D. Marshal, sales manager, and Don M. Mayne, technical engineer, air-conditioning division, Williams Oil-O-Matic Heating Corp., Bloomington, Ill., explained the progress their company had made in gas-air conditioning. Mr. Marshal said that about five years ago his company began to direct its special attention to gas air-condition-

VENT-A-HOOD . . . sensational new patented kitchen ventilator—NOT A FAN—grease trap and centrifugal exhaust unit removes cooking odors from kitchen before they can invade other parts of the house. Prevents greasy vapors from settling on walls—saves housework. Keeps kitchen cool. Biggest innovation since mechanical refrigeration.

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J. Y. Wheeler, Oklahoma manager, Community Natural Gas Co., and immediate past president, Oklahoma Utilities Association; Kate A. Niblack, secretary, Oklahoma Utilities Association, and W. H. Carson, dean, college of engineering, University of Oklahoma.

W. L. Woodward, president Zenith Gas System, Inc., and chairman, gas division, Oklahoma Utilities Association; Frank B. Long, first vice president, Oklahoma Utilities Association, and vice president, Oklahoma Natural Gas Company.

ing. Now, he stated, it has several units in operation in Oklahoma, Texas and other parts of the South. These, he declared, combine summer refrigeration with winter heating in one unit. He predicted that when these units come into general use they practically will even up the summer and winter load of gas utilities.

During the noon hour a luncheon was served to the delegates with Glenn C. Kiley, western division manager, Oklahoma Gas & Electric Co., and president, Oklahoma Utilities Association, presiding. Mr. Kiley introduced, as special guests, Reford Bond, chairman of the Oklahoma Corporation Commission; E. M. Myers, gas and electric engineer of the commission, and W. H. Carson, dean, College of Engineering, University of Oklahoma, Norman, and member of the 1939 general committee, Southwestern Gas Measurement Short Course.

At a meeting of the board of directors of the association, during the convention, R. K. Lane, president, Public Service Co. of Oklahoma, Tulsa, was elected second vice president of the association and chairman of the electric light and power division. He succeeds R. W. McClure, who recently left Oklahoma to become president of the Kansas Electric Power Co., at Lawrence, Kansas.

■ ■

H. A. Frame, Pioneer Gas Man, Dies at Tulsa, Okla.

Harry A. Frame, one of the early operators of a natural gas absorption plant in the Mid-Continent area, died at his Tulsa, Okla., home on August 1 at the age of 57. He had been ill a considerable time.

Mr. Frame was superintendent of the Cleveland, Ohio, plant of the Natural Products Co. of Pittsburgh for 20 years. During the past three years he has headed his own company, the Frame Gas Co., of Cleveland.

THE GAS INDUSTRY IS

"On the March"

A.G.A.E.M. reports appliance sales up for first six months of 1939 over 1938.

Gas Furnace Sales Are Up 101%
Ranges Up 38% Refrigerators Up 30%

A.G.A. also reports a marked gain in number of consumers and an increase in gas send-out.

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● More individual Gas Men subscribe to GAS than to any other publication serving the Gas Industry . . . a definite indication of reader-preference.

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(ABC Statements—July 1939)

GAS	3,475
Gas Age	2,711
Amer. Gas Jnl.	1,638

The total circulation distribution of GAS is 5,256 copies per issue.

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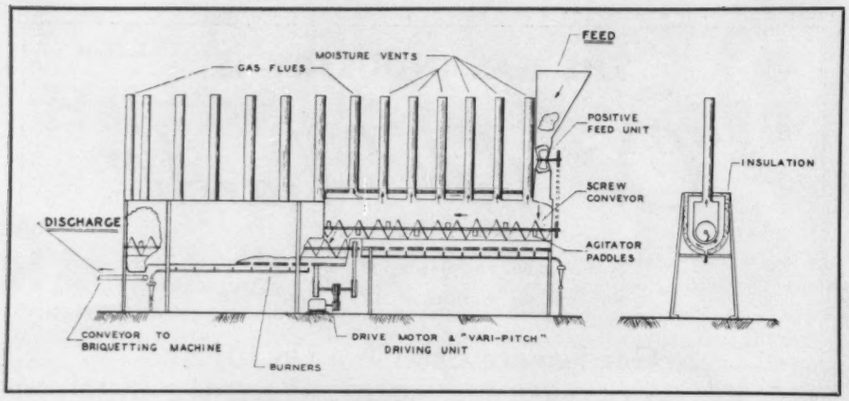

FIG. 1. Sawdust dryer.

A Gas-Fired Sawdust Dryer

IN the manufacture* of wood briquettes from sawdust it is essential to have less than five per cent moisture in the sawdust. Pressures of around 12,000 lbs. per sq. in. used in forming the briquettes will cause any moisture to flash into steam and the briquette will break or explode when released from the mold.

The dryer herein described was designed to satisfy several requirements: low initial cost, uniformity in drying, minimum of operator's attention, and low overall operating costs. All of the commercially built dryers available were considered too expensive and, as a consequence, the plant management decided to build its own equipment. This machine has proven very satisfactory and represents approximately one-eighth the cost of a commercially built dryer.

Principal Feature

The principal feature of the dryer is a 12-ft. length of standard 12-in. screw conveyor, having a fairly close fit between the screw and the case. Paddles mounted on the main shaft between flights increase the agitation of the sawdust as it passes through the conveyor. A steel plate is fitted over the top of the conveyor and vented with six 6-in. moisture vents spaced equidistant along its length. A sheet metal outer housing, having about 4 in. clearance is built around the conveyor and case. This is insulated with a 2-in. thickness of magnesia block.

Gas is supplied by a 2-in. gas manifold pipe, having 20 No. 2 lava tip burners mounted 6 in. apart. A gas air mixture is supplied by means of a venturi mixer, having a gas capacity of 150 cu. ft. per hour of 1150 B.t.u. gas at 8 in. pressure. The lava tip burners fire through 2-in. holes in the outer housing. The housing is vented at one end by means of a 6-in. flue.

The complete dryer as shown in Fig. 1, consists of two 12-ft. lengths, as described above, mounted so that the first unit discharges into the second. The use of two units was occasioned by the necessity of having 24 ft. of travel so that the temperatures within the conveyor could be held below 450° F. and because 12 ft. conveyor lengths are built without any inboard bearings which might cause a pile-up of sawdust inside the conveyor.

The source of power is a single 3-hp. motor, operating through a variable speed device known as a "Vari-Pitch" V-belt pulley system.

The amount of sawdust fed into the dryer is controlled by a revolving feed gate which is positively geared to the main shafting and maintains a constant volume of sawdust in the dryer at all times, regardless of the speed of the screw conveyor. This is an important factor in this type of dryer as it was found that it does not dry efficiently if the screw is more than one-third full.

As the sawdust passes through the conveyor it is agitated by the paddles that are mounted between flights and thus is exposed to the hot air in the dryer. On leaving the second section of the dryer the sawdust drops down on an open top flat belt conveyor. A spreader distributes the hot sawdust in a thin, even layer on this belt, which allows evaporation to continue as it cools while being carried to a storage bin.

Operating data are as follows:

Capacity of dryer—2000 lbs. dry sawdust per hour.

Average loss of moisture—10 per cent.

Gas consumption—300 cu. ft. per hour of 1150 B.t.u. gas.

Power consumption—3 kw. hrs. per hour.

This dryer has been in continuous operation for over five months with excellent results. The sawdust leaving the dryer does not show any signs of scorching or discoloration.

It is believed that this type of dryer may be used to good advantage in drying any type of loose material that can be handled in a screw conveyor and where the percentage of moisture to be evaporated is relatively small.

*Excerpts from Gas Utilization Data Bulletin No. 60 prepared for the Pacific Coast Gas Association by C. Elliot Ginochio, Pacific Gas & Electric Co.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933.

Of GAS, published monthly at Los Angeles, California, for October 1, 1939.

State of California, County of Los Angeles—ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Jay Jenkins, who, having been duly sworn according to law, deposes and says that he is the publisher of GAS, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Jay Jenkins, 810 South Spring St., Los Angeles, Calif.

Managing Editor, Arthur Rohman, 810 South Spring St., Los Angeles, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

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George H. Finley, Santa Barbara, California.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is —. (This information is required from daily publications only.)

JAY JENKINS,
(Signature of Publisher.)

Sworn to and subscribed before me this 26th day of September, 1939.

(Seal) Alva J. Lloyd.

(My commission expires Oct. 24, 1940.)

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One important Cleveland feature that assures low cost trench is truck speed transportation on special trailers. Machines load and unload in 15 minutes.

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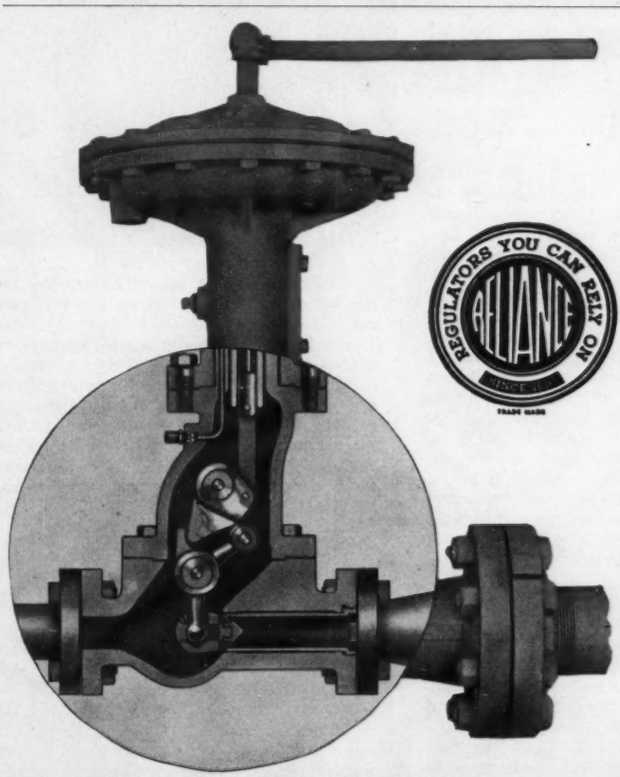

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● In this Type "P" Reliance Regulator, a single streamlined, self-centering valve mechanism floats in the stream flow and provides maximum capacity with minimum friction.

● Hundreds of these Regulators are eliminating many troubles at high pressure metering stations, by holding uniform pressures and insuring accurate measurement.

● Reliance Type "P" Regulators improve customer relations and reduce gas company losses. Expensive upkeep disappears. You can be sure of uniform, close control over a wide range of varying inlet pressures and volume demands, with practically no variation in outlet pressures when Regulators are operated within capacity range. Streamlined flow results in low body friction.

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PROFIT WITH NEW

FRASER
CABINET FURNACE

This NEW Fraser Cabinet Furnace . . . a modern, "stream-lined" unit, finished in ivory—rich in eye appeal . . . gives correct heat at truly low cost . . . requires a minimum of floor space. Also Fraser Floor Furnaces, Wall Furnaces, Winter Air-Conditioning Systems, Basement Furnaces and Consoles . . . available in many sizes . . . offer the utmost in efficiency and economy. Fraser can exactly fill the heating needs of your customer . . . real satisfaction to them . . . real profits to you.

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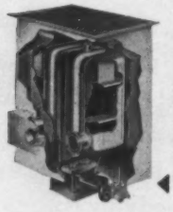

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BEVERLY HILLS, CALIFORNIA

MODERN *Products*

Kitchen Ventilator

The Vent-A-Hood Co., Dallas, Texas.

Model: Standard.

Description: The Vent-A-Hood Kitchen Ventilator is finished in white Dulux with cast chrome-plated corners and with all chromium trim. The base metal is Armco Paint-Grip. Back panels extend below the cooking surface of the range to protect the wall back of range from splashing greases. The Vent-A-Hood attaches directly to the wall by the use of a concealed wooden frame, making an installation easy in every home. Venting is into the flue or into the attic; however, as there is no fire hazard, the vent may be directly through an outside wall or carried inside walls, ceilings or extended underneath the house by ordinary sheet metal duct. Vent outlet is 5 in. The patented centrifugal type exhausting unit and grease trap which is built into each Vent-A-Hood is electrically driven and will displace 325 c.f.m. or give a complete air change 18 times every minute over the range and under the hood. This air change provides the same ventilation in the kitchen as if a 36-in. exhaust fan were working on the entire kitchen. The motor is 1/30 hp. and the centrifugal fan wheel is 5x3½ in. and speed 1550 r.p.m. (two speeds optional). The grease trap capacity is ½ lb. and collects all greases that are separated from cooking vapors by the centrifugal action of the fan wheel. The grease trap is easily removable for regular cleaning.

Dimensions: Three stock sizes. Apartment, 26x40 in.; Standard, 27x44 in., and Jumbo, 28x48 in. Shipping weight is 85 lbs. average and each unit comes packed complete in one carton 15x30x50 in. and with a complete set of directions to insure a satisfactory installation. Several other designs and types are offered besides a complete line of commercial size centrifugal exhaust units with grease traps and hoods made to order.

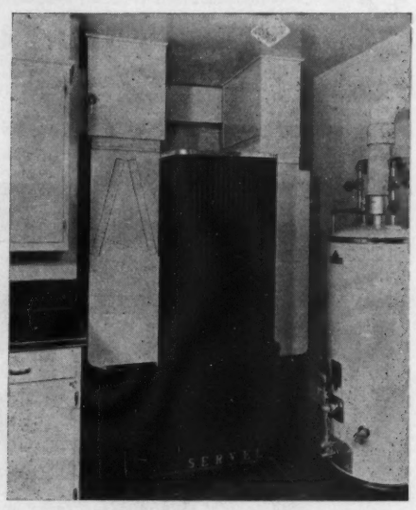
Catalog: A new booklet has been issued, addressed primarily to architects and builders, which describes and illustrates the several stock models and gives general specifications for custom-built equipment.

Air Conditioner-Heater

Servel, Inc., Evansville, Ind.

Description: Servel, Inc. has had experimental installations in operation during the past three years. Above is shown the gas-operated combination air conditioning and house-heating unit featured in the model all-gas home which is part of the gas industry's "Court of Flame" exhibit group at the New York World's Fair. This dual-service appliance is the first of its kind.

Describing the operation of the unit, F. E. Sellman, vice president of Servel, Inc., stated: "The cooling of the air is



obtained by using a closed absorption refrigeration unit, water being the refrigerant, the absorbent being lithium chloride. The unit is hermetically sealed, and, as is the case in the domestic and commercial refrigerators manufactured by Servel, there are no moving parts in the refrigerating system. Water being the refrigerant in the air conditioning unit, it operates at a high vacuum. The generator is heated by steam from a gas-operated atmospheric steam producer."

■ ■

Fulton Pressure Regulators Described in New Catalog

Pressure regulators for natural and manufactured gas are described in the new Chaplin-Fulton Manufacturing Co. catalog No. 40. The 60-page booklet contains descriptions, lists, and diagrams of the various types of gas pressure regulators made by that company to cover ordinary forms of service to private dwellings, mills, factories and street mains, and for controlling steam pressure and gas fuel supply to steam boilers. Copies of the catalog may be obtained by writing the company at 28-40 Penn Avenue, Pittsburgh, Pa.

THE FOREMOST GAS STOP IN THE INDUSTRY

Behind every K-CO gas stop is a tradition of enduring quality. Sound engineering, precision tooling and a pride of craftsmanship are ever-present ingredients in every Kitson product. And K-CO gas stops cost no more than ordinary gas stops. The economy of using K-CO gas stops is obvious.

A Complete Line of Gas Stops and Safety Controls. Send for Catalog A.

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REGISTERED TRADE MARK

G-201 Flathead Standard Gas Stop in Sizes 1/4" to 2".

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100% Satisfactory Installations Prove You Can't Beat a—

JOHN ZINK FLOOR FURNACE

Three Sizes

25,000 B.t.u. 50,000 B.t.u.
70,000 B.t.u.

This Floor Furnace Has Uniform Air Temperature Throughout the Grill Opening

Weight on 50,000 B.t.u. Unit is 150 lbs. (Compare)

JOHN ZINK BURNER COMPANY

TULSA, OKLAHOMA - NEW YORK CITY, N. Y.

Gas Supply for Altus, Okla., Now Under Consideration

Whether or not there is a sufficient supply of natural gas to enable Altus, Okla., to be guaranteed service is being studied by the Consolidated Gas Co., according to Paul Pierson, division manager.

The Consolidated Gas Co. sells wholesale to the Southwestern Light and Power Co., which in turn would supply Altus. Engineers are making a check of the potential supply in the Jackson County field where the gas must be obtained.

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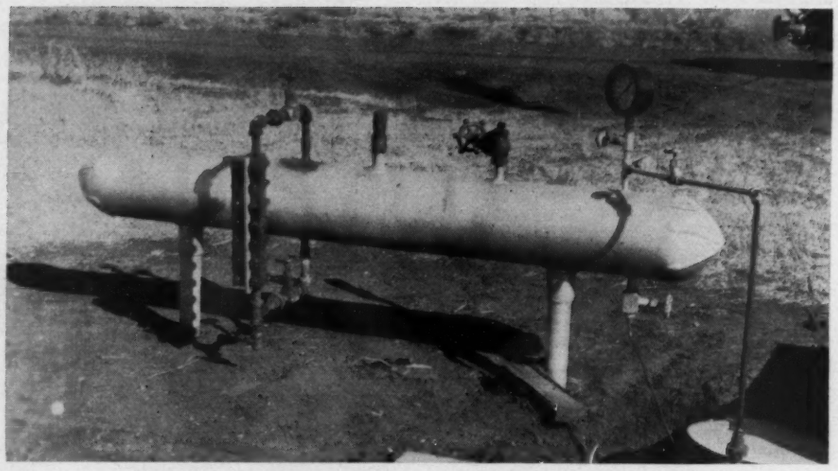


FIG. 1. Alcohol dispensing apparatus developed and used by the Carter Oil Co. in Osage County, Okla., to prevent formation of hydrates in gas transmission lines that might cause service interruption.

Alcohol Dispenser Prevents Formation of Hydrate Ice

MANY field men employed by natural gas and natural gasoline companies have worked to open a plugged pipe line, excavating frozen soil down to the pipe and heating it with a fire kindled with anything at hand, only to have the "slug" of ice loosen and stop again at probably the deepest and most inaccessible point in the system. Several methods have recently been developed and used to prevent the formation of hydrate ice, most of which are quite satisfactory.

A device has been designed and installed by the Carter Oil Co. on an extensive gas gathering and distribution system in Osage County, Okla. It is relatively inexpensive to build, costs little to operate, and yet by its use, plugged pipe lines are almost a thing of the past. Several of these units, practically automatic in operation, are installed at strategic points in the field.

The principal part of the unit is the reservoir, made of a section of pipe of diameter appropriate to the capacity desired. A typical unit is shown in Fig. 1. The reservoir is welded to 2-in. supporting legs, equipped with a reflex liquid level gage, and fitted with filling, vent and pressure equalizing connections on the top and discharge connection on the bottom.

Two connections are then made to the pipe line. One of these, to which a copper tube is attached, is also attached through a needle valve to the lower side of the vessel. The other pipe connection is to provide an equalizer line so that the same pressure will be obtained on the vessel as carried on the pipe line transporting gas. It is attached to the top of the vessel.

Ordinary commercial denatured alcohol is placed in the vessel to the level desired, determined by the amount of liquid to be used over a period of time, and all fittings are closed, excepting the feeder copper line and the pipe installed for equalization of pressure. The needle valve on the copper tubing is then adjusted to permit the necessary amount of alcohol to drip into the gas line, which alcohol blends with the water to lower the freezing point so that, under normal operating conditions, ice will not form.

The cost of the lubricator units is a nominal one, and the amount of alcohol used during the winter months is reasonably small; said to have been not more than 150 gals. for the entire system during the winter of 1938-1939.

■ ■

Laclede's 1939 Home Heating Sales Show Large Increase

Lee A. Brand, manager of the home heating department of the Laclede Gas Light Co., St. Louis, Mo., has reported that his department's total sales for the first eight months of 1939 show a 210 per cent increase over the same period last year. Mr. Brand states that his staff of 32 salesmen have caused between 250 and 300 new buildings to specify gas-designed jobs.

■ ■

Toledo Home Features Gas

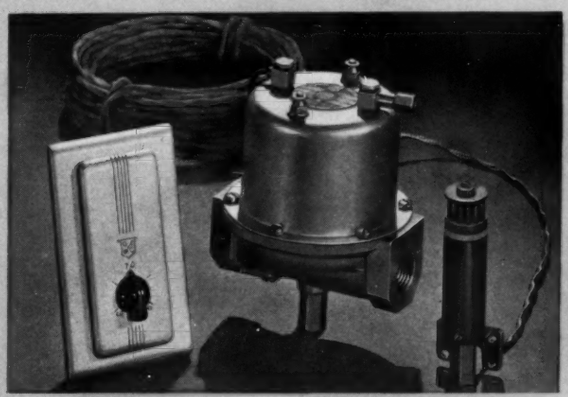
The Ohio Fuel Gas Co., Columbus, recently sponsored the All-Ohio gas home in Toledo, Ohio. In addition to an all-gas kitchen, the home is equipped with gas winter air conditioning, hot water heater and gas laundry appliances.

The home was built by A. B. Stanbery, general contractor.

GENERAL CONTROLS B-60

Leads the parade of the country's most popular and logical line of gas heating controls

B-60 VALVE, PILOT GENERATOR AND REMOTE THERMOSTAT

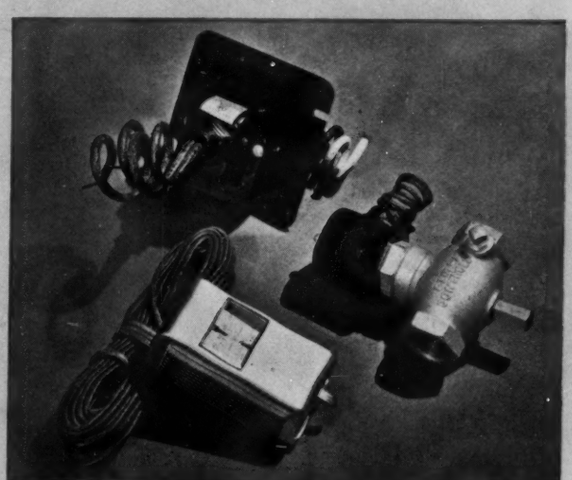


The General Controls B-60 Series Valve has taken the country by storm. Why? Because it is self-operated, actuated by gas, no electricity needed! Because it is quiet, humless and noiseless in operation. Because it is automatic, safely providing pilot control and permitting use of an electric type thermostat with but ½° total differential. Because its unique design automatically anticipates changes in heating requirements, without resorting to artificial means. Because it is ideal for circulating heaters, range heaters, gas radiators, gas-fired boilers, warm air and blower furnaces. Specify General Controls B-60 Series Gas Valves

...they're just right.

GAS HEATING PACKAGE SETS

TYPE T-30



Easy to buy, easy to install, easy to look at, easy to sell. This is the popular T-30 Gas Heating Package Set. It includes Silent Type K-3-B two wire gas valve, T-70-1 two-wire Metrotherm, transformer and 30 feet of wire. It is recommended for gas-fired boilers, floor furnaces, conversion burners, warm air, blower and gravity furnaces. Specify General Controls Gas Heating Package Sets

...they're just right.

GENERAL CONTROLS

450 East Ohio St., Chicago, Ill.
267 Fifth Ave., New York City
1505 Broadway, Cleveland, O.
3626 Wyoming St., Kansas City
6432 Cass Ave., Detroit, Michigan
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General Controls

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are going

And being busy means that our larger staff of employees working in increased factory space, are running in high gear, well prepared for your fall and winter gas heating season. Our own little survey shows our products going to all four corners of our country,—going to town, city, country homes and buildings and industries through our ever-widening branch and distributors' service offices.

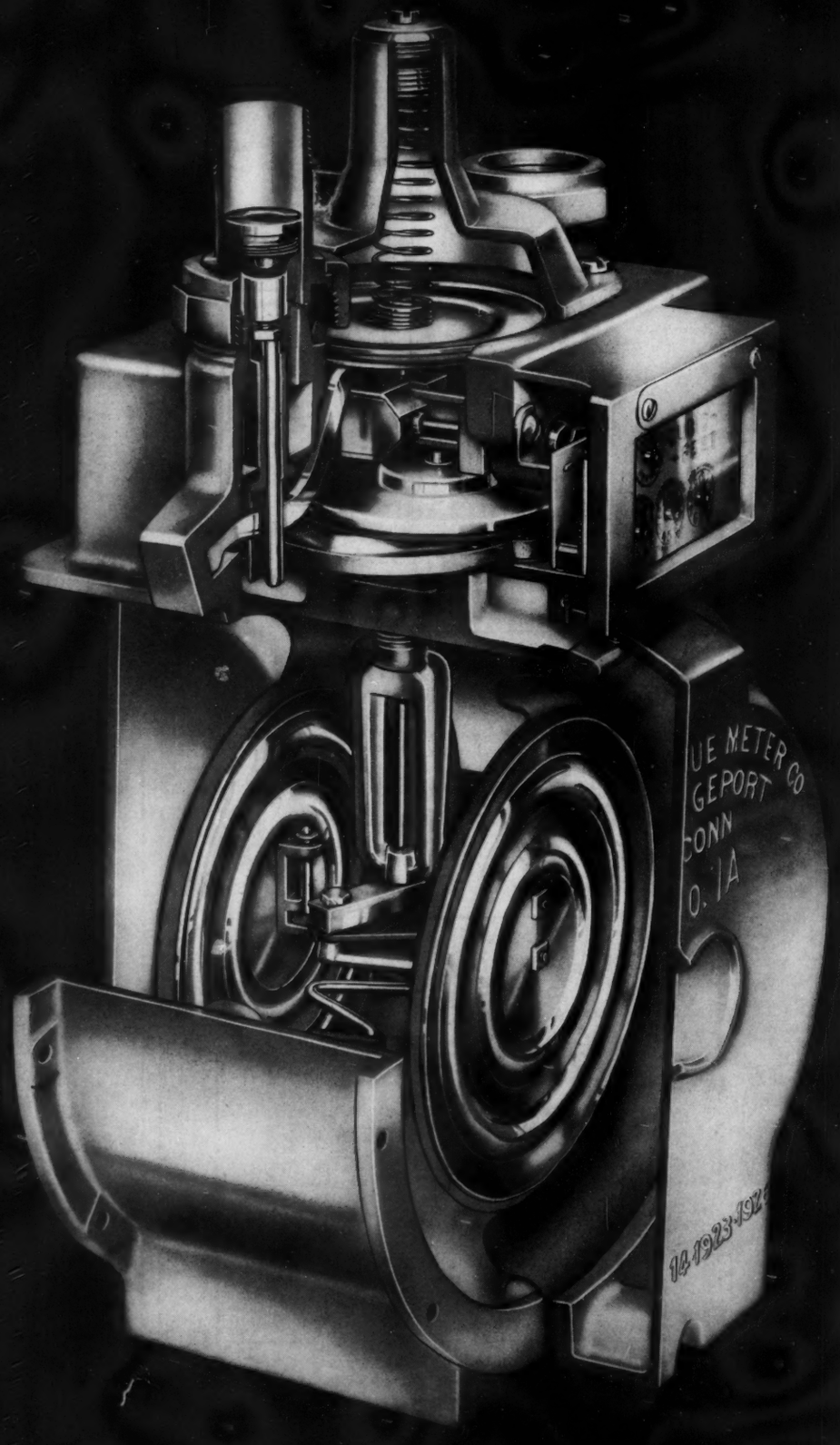
to town

Is there a reason? Those who have come to see us have stayed to buy and left to install our products. They feel we've keyed our products and our organization to the markets and to the times. Yes, General Controls is and are going to town, everywhere. Your request for a 1939-40 Catalog of our popular and logical line of gas heating controls, and the reading of it, will tell you why. Write for it today.

everywhere

They're just right

Sprague Leads Again



Here it is!!

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